DOCUMENT RESUME

ED 289 725 SE 048 810

TITLE	Research Policies for the Social and Behavioral Sciences: Science Policy Study Background Report No. 6. Report Prepared by the Congressional Research Service Library of Congress, Transmitted to the Task Force on Science Policy. Committee on Science and Technology. U.S. House of Representatives. Nineth-Ninth Congress. Second Session.
INSTITUTION	Library of Congress, Washington, D.C. Congressional Research Service.
PUB DATE	Sep 86
NOTE	235p.; Serial U. Document contains small, light print.
AVAILABLE FROM	Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.
PUB TYPE	Legal/Legislative/Regulatory Materials (090) -- Reports - Research/Technical (143) -- Historical Materials (060)
EDRS PRICE	MF01/PC10 Plus Postage.
DESCRIPTORS	*Behavioral Sciences; *College Science; Employment Patterns; *Federal Aid; Higher Education; *Public Policy; School Business Relationship; Science and Society; *Social Science Research; *Social Sciences
IDENTIFIERS	Congress 99th

ABSTRACT

This report summarizes a survey into the governance, use, and support of the behavioral and social sciences in the United States for the last 40 years. The document contains sections which deal with: (1) some major aspects in the history of the relationship between the federal government and the behavioral and social sciences; (2) major fields of behavioral and social sciences; (3) similarities and differences between basic and applied research in the behavioral and social sciences; (4) trends in federal support for the behavioral and social sciences (including a summary and synopsis of federal programs); (5) non-federal funding for behavioral and social science research; (6) studies of the relationships between the government and the behavioral and social sciences; (7) employment patterns and trends in the behavioral and social sciences; (8) examples of the application of behavioral and social research in commercial, administrative and technical settings; (9) issues in the utilization of behavioral and social science research in policymaking; (10) approaches to enhancing the utilization of behavioral and social research in policymaking; and (11) conclusions and implications for policy. (TW)

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SCIENCE POLICY STUDY
BACKGROUND REPORT NO. 6

RESEARCH POLICIES FOR THE SOCIAL AND BEHAVIORAL SCIENCES

REPORT

PREPARED BY THE

CONGRESSIONAL RESEARCH SERVICE
LIBRARY OF CONGRESS

TRANSMITTED TO THE

TASK FORCE ON SCIENCE POLICY

COMMITTEE ON SCIENCE AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES

NINETY-NINTH CONGRESS

SECOND SESSION

Serial U

SEPTEMBER 1986

Printed for the use of the Committee on Science and Technology

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U.S. GOVERNMENT PRINTING OFFICE
60-422 O WASHINGTON : 1986

For sale by the Superintendent of Documents, Congressional Sales Office
U.S. Government Printing Office, Washington, DC 20402

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LETTER OF TRANSMITTAL

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE AND TECHNOLOGY,
Washington, DC, August 28, 1986.

To the Members of the Science Policy Task Force:

We transmit herewith the sixth Background Report prepared for our Science Policy Task Force. This report is entitled "Research Policies for the Social and Behavioral Sciences".

In the development of the agenda for our two-year study of government science policy, we decided early on that we could not possibly include in our study a careful and detailed analysis of each of the disciplines within science, such as physics, chemistry, astronomy or zoology. However, an exception was made in the case of the social sciences. This was due to the strong interest on the part of many of our members in the role which the results of research in the social and behavioral sciences potentially may be able to play in our society. This is a topic which has been before the Committee on Science and Technology and other committees of the Congress on numerous occasions in recent years, in part because of questions raised on the part of the current Administration concerning the relative priority that should be given to support for research in the social sciences in the context of the over-all support for scientific research at a time when funds for all governmental purposes were scarce.

To provide an overview of this entire area of scientific research, we commissioned a comprehensive background study from the Congressional Research Service of the Library of Congress. We were highly fortunate that Ms. Genevieve Knezo was assigned to carry out this study. Ms. Knezo's extensive knowledge and experience in the science policy field generally, and her broad knowledge of the literature dealing with the social and behavioral sciences in particular has yielded a most useful study. It covers most of the questions which the Task Force has raised about the past and present policies of the Federal Government's role in providing support for these areas of science, and provided, we believe, a solid foundation for our own evaluation of the future policies which our Government should pursue with regard to the support and utilization of research results in these fields of science.

We commend this study to the attention of the members of the Science Policy Task Force, the members of the Committee on Science and Technology and the interested members of the Congress.

Yours truly,

DON FUQUA,
Chairman.

MANUEL LUJAN,
Ranking Republican Member.

LETTER OF SUBMITTAL

CONGRESSIONAL RESEARCH SERVICE,
THE LIBRARY OF CONGRESS,
Washington, DC, May 8, 1986.

Hon. DON FUQUA,
Chairman, Committee on Science and Technology, U.S. House of Representatives, Washington, DC.

DEAR MR. CHAIRMAN: We are very pleased to transmit this report entitled *The Evolution of U.S. Behavioral and Social Sciences Research Policies: An Overview of the Federal Role, The Size of the Community, Non-Governmental Support, Advisory Commission Studies, and Issues in Utilization of Research.* The report was prepared in response to a request of the Task Force on Science Policy of the House Committee on Science and Technology for an historical study of selected public and private aspects of the governance, support, and use of the behavioral and social science during the last 40 years. As is characteristic of Congressional Research Service policy reports, programmatic and policy options are discussed impartially, but no recommendations are made.

This report was prepared by a team of CRS analysts under the coordination of Genevieve J. Knezo, Specialist in Science and Technology. Edith F. Cooper, Analyst in Science and Technology, prepared the first draft of section B of chapter V and compiled the tables on Federal agency funding. Christine Matthews Rose prepared intial drafts to chapters VI and VIII. Nancy Connors, an Analyst in Science and Technology during the summer of 1985, prepared the draft of the case study on intelligence testing that is presented in chapter X. Ms. Knezo drafted the rest of this study and edited the entire manuscript.

A preliminary draft of this report was delivered to the Task Force for background use for hearings held in the summer and fall of 1985. Also, the draft was circulated for peer comment, at the request of the committee, to interested experts. In response, we received critiques, comments, and information from staff of the National Research Council of the National Academy of Sciences, the National Science Foundation, the Consortium of Social Science Associations, the American Psychological Association, the American Anthropological Association, the Federation of Behavioral, Psychological and Cognitive Sciences, as well as from individual behavioral and social scientists and policy researchers within and outside of the Government. The project coordinator took these comments into account in preparing the final draft of this report.

We appreciate having been asked to undertake this analysis of critical governmental programs and policies for these vital and exciting fields of science. We hope this report meets the needs of the Task Force on Science Policy.

Sincerely,

JOSEPH E. ROSS, *Director.*

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I. INTRODUCTION AND EXECUTIVE SUMMARY

The Task Force on Science Policy of the House Committee on Science and Technology, as part of its series of background studies on major science policy issues since 1945, asked the Congressional Research Service to prepare a study surveying the governance, use, and support of the behavioral and social sciences in the United States for the last forty years. This document was requested to serve as background information for the hearings on the same subject, held in 1985, and as part of the publications series of the Task Force. Specifically, the committee requested:

(a) An estimate of the size of the social and behavioral research community in the United States, including the number of researchers and research organizations by discipline;

(b) An analysis of past expenditures by Federal agencies in support of these sciences and current trends;

(c) An analysis of non-governmental funding for the social and behavioral sciences;

(d) An analysis, through a limited number of case studies of the advantages and disadvantages of using the research results of social and behavioral sciences in public and private decision-making about policy issues;

(e) A review of past studies in this field, the recommendations they contain, and their impact;

(f) The criteria that have in the past been used to justify Federal support for these sciences and the validity of those criteria;

(g) The extent to which the distinction between basic and applied research applies to the social and behavioral sciences; and

(h) ". . . [O]ther aspects . . ." deemed relevant.

This study addresses these issues. Conclusions and implications for policy are summarized in chapter 12. The following is a summary of the main findings of this report.

In this study the terms behavioral sciences and psychological sciences are equivalent. In addition, the fields of science encompassed are those which the National Science Foundation categorizes as "psychology" and as "social sciences." Federal agencies fund basic and applied research in these fields, as well as development, dissemination, and related activities. Federal funding for research in these disciplines is estimated to total about $722 million for the fiscal year 1986. Although no current, accurate figures are available, Federal funding for development and dissemination and related activities in these disciplines was estimated to total just over $1 billion (nominal dollars) in 1977. The National Science Foundation reported that there were 390,700 employed behavioral and social scientists in 1983, the latest year for which appropriate data are available. About 12 percent of these scientists conducted research

and development. Many behavioral and social scientists are employed in academia. But a growing number are employed in industry. For instance, the social science survey research industry has been called a "$4 billion a year business." Many other behavioral and social scientists are employed in high-technology businesses, in States and local government, and in clinical settings.

This report answers some specific historical questions about the governance, support, and use of the behavioral and social sciences. It shows that the Federal Government has played the most determinate role of all funding sponsors, but a well-defined Federal research support role did not emerge until after World War II. Prior to World War II, foundations helped establish "core" research institutes and supported some methodological development in the behavioral and social sciences. Since then, Foundations often have funded, among other things, research on controversial social issues which Government has tended to avoid. Federal support for behavioral and social research since 1967 totals about 11 billion dollars and constitutes the lion's share of support for U.S. basic and applied research in the behavioral and social sciences. This represents about 5.8 percent of the approximately $189 billion in Federal funding for research in all scientific disciplines since 1967. If total Federal expenditures for behavioral and social sciences (including development, dissemination, and related activities) were added together, this total probably would at least double to $22 billion. (Accurate data are not available, this figure was calculated on the basis of a survey made of 1977 activities.)

The Government clearly distinguishes basic research support from applied research support. Some scientists object to this differentiation and argue that there are no significant differences between basic and applied research and that both may generate new knowledge or have potential applications. Others promote the dichotomy, saying that utilization of research will be enhanced only if basic research is clearly distinguished from applied, and if separate training programs, expectations, and oversight criteria are used. They also argue that a dichotomy clarifies the rationale for Federal support of basic research and protects the pluralistic structure of U.S. research support and production, the hallmark of the Nation's rich scientific productivity.

Since 1945, most Federal support has been for applied research, not for basic, in the ratio of 3 applied to 1 basic for social sciences research and 2 applied to 1 basic for behavioral sciences. The Government supports more social sciences than behavioral sciences research. Agencies whose mission is research support have provided about 30 percent of Federal research funds for these disciplines; mission-oriented agencies (the Department of Defense and the social agencies) support the bulk. Basic support in these fields has come largely from the agencies whose primary mission is research—the National Science Foundation and the National Institutes of Health and agencies of the Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA). The largest supporters of applied research in these disciplines are the Departments of Health and Human Services, Agriculture, and Defense. The Departments of Health and Human Services and of Defense are the largest supporters of psychology research; the largest supporters of

social sciences research are the Departments of Health and Human Services, Agriculture, and Education.

The National Academy of Sciences estimated that Federal funding for behavioral and social "knowledge production and application" totaled about $1.9 billion in 1977, with about $700 million going for research and $300 million for development. Federal funding for related activities (including program evaluations, general purpose statistics, demonstrations for policy implementation and dissemination)—which are important elements of Federal policies for behavioral and social sciences because they employ behavioral and social scientists and generate information for decisionmakers—totaled $874 million in 1977 (the aforementioned dollar figures include salaries and expenses and overhead for the activities described.) Currently funding data are published only about research in these fields.

Federal support for the behavioral and social sciences, as a proportion of funding for all research fields, started decreasing in the late 1970s. The decrease was accelerated beginning in 1981, with the advent of the Reagan Administration. Federal support for behavioral sciences did not decrease in all agencies, but priorities were changed to deemphasize social factors. Cuts were made in the NSF support programs (offset, in some cases by increases in other agencies). Support for social sciences research was decreased substantially. Funding levels in subsequent years have not reached the fiscal year 1980 funding level when expressed in terms of constant dollars.

Today Federal support for research in these fields constitutes about 4.8 percent of all funds awarded for scientific research, the same proportion as the pre-"Great Society", that is pre-1965, funding levels. In 1986, estimated, in terms of constant 1972 dollars, the funding level of $296 million is 27 percent lower than the average annual support level of $405 million during the period of 1970 to 1980, and is 35 percent below the peak level reached in 1978. However, behavioral and social sciences manpower increased about 40 percent over the period 1970 to 1980.

There appear to be widespread applications of federally supported behavioral and social research in clinical, administrative, and technical settings. But there are complaints that much federally supported behavioral and social research is not used effectively for policymaking purposes and that the impact of such research on policymaking is not direct and apparent (in the terms of what has been described as a "social engineering" model). Many experts agree that behavioral and social science research information serves effectively when it is measured in terms of "enlightening decisionmakers," in a cumulative process over a long period of time. According to this model, usually no one particular study can be identified as affecting policy, but knowledge accumulates over time and influences decisionmakers by helping them to frame questions for discussion regarding policy options or by allowing them to reject solutions that will not be effective. It may be that an "enlightenment" model of utilization is the most appropriate to use in evaluating use of behavioral and social research in policy, given the fact that crucial political factors and choices and value consid-

erations are more important determinants of most policy outcomes than is objective scientific information.

It may be that some expectations for using behavioral and social science research directly in policymaking do not recognize the many obstacles both to the production of policy-relevant knowledge and also to its application in complex processes of bureaucratic and political decisionmaking. Some of these obstacles that affect researchers are discussed in this report. They include: producing counterintuitive findings, producing research which is irrelevant to policymaking, political naivete regarding bureaucratic functioning and the vagaries of political decisionmaking, conflicts stemming from the need to respond to the academic reward system which may differ from the rewards of policy-advising, inadequate knowledge and inappropriate quantification, and fraud and deception.

Some believe that application and utilization of knowledge in these fields of science would be enhanced if Federal agencies supported, and if researchers promoted, the conduct of more long-range research, with priorities determined on an interagency basis, about the fundamental aspects of behavioral and social issues of concern to policymakers. This is in contrast to determining research funding priorities primary on the basis of internal scientific choice, curiosity, or the short-term applied research needs of Federal agencies. This notion coincides in part with debate now beginning in the field of science and technology policy about whether scientists benefitting from Federal funding should support "more socially responsible" fundamental research.[1]

There also have been recommendations that Federal funding for behavioral and social research relevant for policymaking would be enhanced if there were more consideration given to: including the issue of implementation in research designs, improving linkages between decisionmakers and scientists, creating Government-funded policy research units, improving information dissemination, and creating "research broker" staffs. Some believe that the growing field of policy sciences may offer decisionmakers useful policy and program guidance.

Current policy concerns arise from criticisms made regarding ineffective utilization of some kinds of behavioral and social research and the need to determine appropriate priorities for Federal funding in an era of budget austerity. The following are among the major policy issues raised for possible further consideration by both social and behavioral scientists and by policymakers: Is behavioral and social research somehow less "scientific", objective, or rigorous than the natural and physical sciences? Should the Federal Government collect more accurate information to describe support of the fields of behavioral and social science? Should agencies coordinate research programs to: enhance cross-fertilization between basic and applied research, to support the conduct of more "socially relevant" longer-range research, and to improve dissemination of the results of federally supported research efforts? Who should determine what is "socially relevant" longer-range research? Will the integrity of these fields of science be significantly jeopardized if be-

[1] Shapley, Deborah and Rustum Roy. Lost at the Frontier: U.S. Science and Technology Policy Adrift. Philadelphia, ISI Press, 1985, 223 p.

havioral and social scientists give more attention to doing research which is intended to serve some potential policy purpose? Should the Government reexamine the various institutional arrangements proposed to produce more relevant behavioral and social research for policy purposes?

During the last few years, there has begun what may be permanent long-term employment shifts from academia to other employment sectors—especially industry. The primary activity of behavioral and social scientists in industry is not research. National Science Foundation data describe an oversupply of some types of behavioral and social scientists, but not necessarily in the areas sought by industry. There is some evidence that Federal support policies may be decreasing the supply of scientific personnel in the behavioral and social sciences. This raises policy questions about whether industry and/or government should play a larger role in supporting research and training in specifically targetted subfields within the behavioral and social sciences, and about the need for enhancing partnerships between these two sectors.

II. AN OVERVIEW OF SOME MAJOR ASPECTS IN THE HISTORY OF THE RELATIONSHIP BETWEEN THE FEDERAL GOVERNMENT AND THE BEHAVIORAL AND SOCIAL SCIENCES

A. Introduction

The pace and direction of many critical events and developments in the behavioral and social sciences as sciences have been influenced by the Nation's social and political environment and changing social conditions. (For a description of fields encompassed, see footnote 1 below).[1] Many developments have been determined largely by direct and indirect actions of the Federal Government.[2]

This chapter traces some major events in the history of the Federal Government relationship with the behavioral and social sciences with respect to such areas as basic research, applied research, defense, and the "Great Society" programs. Efforts to "institutionalize" these sciences in government are traced, and attention is given to the policies of the Reagan Administration.

B. Pre-World War II

The social sciences, which derived some of their early ideas and personnel from the fields of moral philosophy and social work, were first organized as scientific disciplines in the United States in the 1880s.[3]

The first type of Federal sponsorship of behavioral and social research was confined to the problem-solving needs of Government. Kenneth Prewitt, when he was President of the Social Science Research Council, reported an early instance of Federal support of social research: a small research grant from the Secretary of the Treasury to a Professor Bates of the University of Pennsylvania to study bursting steam boilers. Bates and his team reported that the

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[1] The Task Force on Science Policy, as noted in chapter I, requested that this study deal with the "social and behavioral sciences." The National Science Foundation collects funding and personnel data for these fields of science, but uses the categories of "psychology" and "social sciences." Because NSF data are used extensively throughout this report, in this report the terms "behavioral" science encompasses those fields of science included under in the NSF category "psychology" and "social" science encompasses those fields of science included in the NSF category "social sciences." NSF divides "psychology" into three categories: biological aspects, social aspects, and psychological sciences, n.e.c. "Social science" includes, according to NSF, anthropology, economics, political science, sociology, and social sciences, n.e.c. The term "n.e.c." is for "not elsewhere classified," which is defined as including "multi-disciplinary projects within a broad field and single-discipline projects for which a separate field has not been assigned." (U.S. National Science Foundation. Federal Funds for Research and Development: Fiscal Years 1983, 1984, and 1985, v. 33. Detailed Statistical Tables. Washington, U.S. Govt. Print. Off., 1984. P. 3-4. (NSF 84-336).)

[2] On this point, see, for instance, Harvey Brooks. Sponsorship and Social Science Research, Society, May/June 1984: 81.

[3] See also: Haskell, Thomas L. The Emergence of Professional Social Science. The American Social Science Association and the Nineteenth-Century Crisis of Authority. Urbana, University of Illinois Press, 1977. 276 p.

problem involved the human dimension: "Sometimes there is a little carelessness in stoking the fire." [4]

One of the earliest sustained Federal users and supporters of social science research was the Agriculture Department, which funded data gathering and social research relating to factors of production and marketing.[5] This mission still continues. Today the Department of Agriculture funds the third largest amount of behavioral and social research, after the Departments of Health and Human Services and Defense. (See table 1.) The Census Bureau is another example of an early and continuous user of federally funded social science data collection and methodology. Another kind of major link between social science and the Government occurred in 1885, according to Prewitt, when Government created the Bureau of Labor Statistics, to help provide non-biased policy relevant labor statistics to help overcome a period of major "civil strife and industrial violence", as well as the need to deal with labor reformers pressing for improvements in working conditions.[6]

TABLE 1.—FEDERAL OBLIGATIONS FOR RESEARCH IN BEHAVIORAL AND SOCIAL SCIENCES, BY AGENCY AND CHARACTER OF WORK, FISCAL YEARS 1965, 1975, AND 1985 (ESTIMATED)

[In thousands of dollars]

	Social sciences	Behavioral sciences	Total, social and behavioral	Total, all fields
1965				
Total research	127,389	103,479	230,868	4,853,884
All agencies basic research	36,931	57,763	94,694	1,689,931
Basic research at universities and colleges	NA	NA	NA	NA
NSF				
Total, basic and applied	11,772	7,285	19,057	171,732
Basic research	11,097	7,285	18,382	171,057
Basic research at universities and colleges	NA	NA	NA	NA
DHEW/DHHS				
Total, basic and applied	50,644	64,644	115,288	861,735
Basic research	9,775	34,874	44,649	302,915
Basic research at universities and colleges	NA	NA	NA	NA
AGRICULTURE				
Total, basic and applied	25,793	(1)	25,793	217,824
Basic research	5,239	(1)	5,239	90,254
Basic research at universities and colleges	NA	(1)	NA	NA
DEFENSE				
Total, basic and applied	4,886	21,321	26,207	1,751,493
Basic research	2,260	7,955	10,215	263,326
Basic research at universities and colleges	NA	NA	NA	NA
EDUCATION				
Total, basic and applied	(2)	(2)	(2)	(2)
Basic research	(2)	(2)	(2)	(2)

[4] Prewitt, Kenneth. Social Science Utilities. Society, v. 17, Sept./Oct. 1980. 7.

[5] For an overview of the early history, see: Lyons, Gene M. The Uneasy Partnership: Social Science and the Federal Government in the Twentieth Century. New York, Russell Sage Foundation, 1969. 394 p.

[6] Prewitt, Kenneth. Making A Difference: The Social Sciences. Written for a conference, "Social Science Research in Canada," Oct. 3-5, 1984. 5.

TABLE 1.—FEDERAL OBLIGATIONS FOR RESEARCH IN BEHAVIORAL AND SOCIAL SCIENCES, BY AGENCY AND CHARACTER OF WORK, FISCAL YEARS 1965, 1975, AND 1985 (ESTIMATED)—Continued

[In thousands of dollars]

	Social sciences	Behavioral sciences	Total, social and behavioral	Total, all fields
Basic research at universities and colleges				
LABOR				
Total, basic and applied	6,104	(1)	6,104	6,228
Basic research	1,146	(1)	1,146	1,146
Basic research at universities and colleges	NA	(1)	NA	NA
JUSTICE				
Total, basic and applied	NA	NA	NA	NA
Basic research	NA	NA	NA	NA
Basic research at universities and colleges	NA	NA	NA	NA
TRANSPORTATION				
Total, basic and applied	NA	NA	NA	NA
Basic research	NA	NA	NA	NA
Basic research at universities and colleges	NA	NA	NA	NA
HUD				
Total, basic and applied	NA	NA	NA	NA
Basic research	NA	NA	NA	NA
Basic research at universities and colleges	NA	NA	NA	NA
COMMERCE				
Total, basic and applied	5,630	263	5,893	43,571
Basic research	2,517	106	2,623	24,235
Basic research at universities and colleges	NA	NA	NA	NA
1975				
Total research	301,826	139,192	441,008	6,729,708
All agencies basic research	73,757	58,642	132,399	2,588,427
Basic research at universities and colleges	40,404	27,918	68,322	1,229,791
NSF				
Total, basic and applied	40,319	9,112	49,431	570,015
Basic research	27,127	8,474	35,601	485,989
Basic research at universities and colleges	23,056	7,896	30,952	378,721
DHEW/DHHS				
Total, basic and applied	99,192	61,240	160,432	1,914,946
Basic research	14,830	26,448	41,278	901,853
Basic research at universities and colleges	8,394	14,642	23,036	579,946
AGRICULTURE				
Total, basic and applied	50,700	(1)	50,700	401,944
Basic research	12,484	(1)	12,484	154,184
Basic research at universities and colleges	8,372	(1)	8,372	43,290
DEFENSE				
Total, basic and applied	5,536	39,573	45,109	1,431,007
Basic research	1,803	9,493	11,296	300,065
Basic research at universities and colleges	272	4,598	4,870	105,530
EDUCATION				
Total, basic and applied	(2)	(2)	(2)	(2)
Basic research	(2)	(2)	(2)	(2)
Basic research at universities and colleges	(2)	(2)	(2)	(2)

TABLE 1.—FEDERAL OBLIGATIONS FOR RESEARCH IN BEHAVIORAL AND SOCIAL SCIENCES, BY AGENCY AND CHARACTER OF WORK, FISCAL YEARS 1965, 1975, AND 1985 (ESTIMATED)—Continued

[In thousands of dollars]

	Social sciences	Behavioral sciences	Total, social and behavioral	Total, all fields
LABOR				
Total, basic and applied	14,780	498	15,278	15,278
Basic research	834	43	877	877
Basic research at universities and colleges	(1)	(1)	(1)	(1)
JUSTICE				
Total, basic and applied	11,817	(1)	11,827	18,895
Basic research	6,342	(1)	6,342	9,465
Basic research at universities and colleges	(1)	(1)	(1)	(1)
TRANSPORTATION				
Total, basic and applied	1,451	(1)	1,451	53,844
Basic research	(1)	(1)	(1)	75
Basic research at universities and colleges	(1)	(1)	(1)	(1)
HUD				
Total, basic and applied	28,661	(1)	28,661	33,495
Basic research	(1)	(1)	(1)	(1)
Basic research at universities and colleges	(1)	(1)	(1)	(1)
COMMERCE				
Total, basic and applied	7,750	151	71,901	144,420
Basic research	11	80	91	20,065
Basic research at universities and colleges	(1)	(1)	(1)	(1)
1985 (Estimated)				
Total research	473,046	295,325	768,371	16,034,220
All agencies basic research	158,491	116,781	275,272	7,637,587
Basic research at universities and colleges	64,067	74,164	138,231	3,803,137
NSF				
Total, basic and applied	49,931	15,352	65,283	1,414,017
Basic research	42,174	15,188	57,902	1,335,809
Basic research at universities and colleges	28,320	14,000	42,320	976,262
DHHS				
Total, basic and applied	139,188	143,558	282,746	4,605,063
Basic research	37,563	70,005	107,568	2,925,916
Basic research at universities and colleges	17,959	39,596	57,555	1,853,353
AGRICULTURE				
Total, basic and applied	103,572	100	103,672	869,708
Basic research	24,051	40	24,091	419,727
Basic research at universities and colleges	17,388	(1)	17,388	149,579
DEFENSE				
Total, basic and applied	6,901	116,038	122,939	3,319,399
Basic research	3,084	27,376	30,460	913,195
Basic research at universities and colleges	(1)	18,268	18,268	453,440
EDUCATION				
Total, basic and applied	50,158	2,397	52,555	77,780
Basic research	13,347	54	13,401	14,272
Basic research at universities and colleges	NA	NA	NA	NA

TABLE 1.—FEDERAL OBLIGATIONS FOR RESEARCH IN BEHAVIORAL AND SOCIAL SCIENCES, BY AGENCY AND CHARACTER OF WORK, FISCAL YEARS 1965, 1975, AND 1985 (ESTIMATED)—Continued

[In thousands of dollars]

	Social sciences	Behavioral sciences	Total, social and behavioral	Total, all fields
LABOR				
Total, basic and applied	18,357	(1)	18,357	18,357
Basic research	4,478	(1)	4,478	4,478
Basic research at universities and colleges	NA	NA	NA	NA
JUSTICE				
Total, basic and applied	12,898	800	13,968	14,948
Basic research	2,570	(1)	2,570	2,570
Basic research at universities and colleges	NA	NA	NA	NA
TRANSPORTATION				
Total, basic and applied	10,521	300	10,821	80,030
Basic research	(1)	(1)	(1)	400
Basic research at universities and colleges	NA	NA	NA	NA
HUD				
Total, basic and applied	(1)	(1)	(1)	(1)
Basic research	(1)	(1)	(1)	(1)
Basic research at universities and colleges	(1)	(1)	(1)	(1)
COMMERCE				
Total, basic and applied	758	237	995	219,603
Basic research	20	77	97	18,416
Basic research at universities and colleges	(1)	(1)	(1)	(1)

NA—Not available
[1] None
[2] A component of the Department of Health, Education, and Welfare at this time

Sources: Federal Funds for Research, Development and Other Scientific Activities Fiscal Years 1965, 1966, and 1967, v. 15. NSF 66-25.
Federal Funds for Research and Development. Federal Obligations for Research by Agency and Detailed Field of Science: Fiscal Years 1967-1985. NSF/Division of Science Resource Studies. 167 p.
Federal Funds for Research and Development. Federal Obligations for Research to Universities and Colleges by Agency and Detailed Field of Science: Fiscal Years 1973-1985. NSF/Division of Science Resource Studies. 115 p.
Federal Funds for Research, Development and Other Scientific Activities, Fiscal Years 1975, 1976, and 1977, v. 25. NSF 76-315.
Federal Funds for Research and Development: Fiscal Years 1983, 1984, and 1985, v. 33. NSF 84-336.

During the next almost fifty years, relations between the U.S. universities and social science community and the Federal Government were more distant and foundations provided the bulk of support for the study of controversial issues in behavioral social research. (See chapter VI in this report.) This distance arguably enhanced the scientific basis of these disciplines. Prewitt reported that during this period, essentially the last decade of the nineteenth century and the first forty years of the twentieth century, "important parts of the social sciences turned inward" and detached themselves from the political agenda "in an effort to achieve scientific respectability." This period led to major growth of the theoretical and methodological bases of the disciplines, according to Prewitt and Theda Skocpol, which has given these disciplines a comparative edge internationally. In other countries they said, these disciplines were not developed as quickly, because governments frequently called upon behavioral and social scientists to provide applied research products. As a result, their intellectual and scientific advance was constrained in contrast with developments in the United States, where these sciences flourished intel-

lectually. However, social scientists in other countries did learn how to interact with decisionmakers and to build up the public support and coalitions necessary to influence policymaking directly, a tradition that was lacking in the United States.[7]

Social historians disagree somewhat about the influence of social scientists in the New Deal. Prewitt concluded that although the delayed emergence of a welfare state ideology in the United States allowed these sciences the time and freedom to "look inward", these disciplines did not make much of a contribution to New Deal social legislation. Exceptions include the cases of rural sociologists and agricultural economists who helped to design the "farm credit system." [8]

Government economists and statisticians influenced by the writings of John Maynard Keyes, are credited with having helped to design the fiscal policies of the 1930s and the social security system,[9] but, according to Prewitt, "the voluminous *Recent Social Trends*, commissioned by President Herbert Hoover and delivered to President Franklin D. Roosevelt had but slight impact on the New Deal." [10] This 1,500 page report was prepared under the direction of W.F. Ogburn, a sociologist. It was released in 1933. (In 1983 the National Academy of Sciences held a symposium focused on a fifty year retrospective analysis of the Ogburn report with an account of behavioral and social science achievements during the last five decades. It was published in 1985 as *Behavioral and Social Science: Fifty Years of Discovery.*[11]

C. Wartime and Post-World War II

Government called upon all scientific disciplines during World War II and behavioral and social scientists were no exception. Government and university scientists were used by military and civilian agencies alike in an effort to design programs to cope with the rapid social dislocations and changes prevelant in wartime and then in conversion to peacetime. Behavioral and social science research made major contributions to propaganda analysis, studies of morale, wage and price surveys, military intelligence, military recruitment, and design of the GI bill.[12]

After the war, the social and behavioral sciences, especially sociology, economics, political science, and anthropology, contributed to such areas as occupation policies, design and programs to implement new German and Japanese constitutions, and the development of such programs as Point IV, which provided technical assistance to the newly emerging nations, the United Nations, and

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[7] Skocpol, Theda. Governmental Structures, Social Science, and the Development of Economic and Social Policies. Remarks Presented at the SSRC Symposium on Studies and Technology. New York City, June 11, 1984: 8, 11.

[8] Prewitt, Making a Difference, op. cit., p. 5, 6; Skocpol, p. 6.

[9] Sills, David L. Council Marks 50th Anniversary of Its Committee on Social Security. Social Science Research Council Items. Sept. 1985: 39–40.

[10] Prewitt, Making a Difference, op. cit. p. 5–6. Some other social scientists have coedited the report with enduring utility from both a scientific and policy perspective. See for example, Chapters 1 and 2 of Smelser, Neil and Dean R. Gerstien eds. Behavioral and Social Science: Fifty Years of Discovery. Washington. National Academy Press, 1985.

[11] Smelser, Neil, Jo and Dean and R. Gerstein. Behavioral and Social Science, Fifty Years of Discovery. Washington. National Academy Press, 1985.

[12] Prewitt, Making a Difference, op. cit., Paul F. Lazarsfeld, and Jeffrey G. Reitz. An Introduction to Applied Sociology. New York, Elservier, 1975. 196 p.

the Marshall Plan for European Recovery.[13] Research projects in these areas, according to Prewitt, required social scientists to develop such research techniques and methods as large-scale team research, evaluation methodology, national surveys, and multidisciplinary research methods and institutes. These fundamental methodologies later proved useful in doing applied social research demanded by the Government during the 1960s and 1970s for the design and evaluation of the "Great Society" programs.[14]

Following the war, legislation was enacted in 1946, which resulted in the establishment of the National Institute of Mental Health (NIMH) in 1949. This inaugurated a significant period of growth in governmental funding for the behavioral sciences. In fact, Nelson reported that by January 1967 when the NIMH was transferred from the National Institutes of Health and raised to bureau status within the Public Health Service, it was the largest NIH institute, accounting for 22 percent of NIH's total budget, and "was nearly twice the size of the Cancer Institute, the second largest institute." [15]

D. The Social Sciences in NSF

When the National Science Foundation was created in 1950, support for social sciences was given only reluctantly. The social sciences were permitted to be funded slowly, under NSF's permissive mandate to support "other sciences" and were not given an explicit mandate. Support was awarded only for quantitative, *scientific*, as opposed to policy-oriented studies. This occurred because "many of the physical scientists who were most influential in shaping the NSF also feared that an active social science research program would produce a political backlash in Congress that would hurt the natural sciences as well."[16] A prominent view was that "the social and the physical sciences have nothing in common and that, at best, the social sciences are a propagandist, reformist, evangelical sort of cult."[17] According to Roberta Balstad Miller, "The failure to include the social sciences in NSF was due to three factors: opposition by key scientists; conservatives' fears that social science research would emphasize potential political problems such as racial inequality; and the failure of social scientists to make a strong bid for their inclusion." [18]

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[13] See, for example. "The Point IV Program: Technological Transfer as the Basis of Aid to Developing Countries." *In* U.S. Congress. House. Committee on Science and Astronautics. Subcommittee on Science, Research, and Technology. Technical Information for Congress. Report prepared by Senior Specialists and the Science Policy Research Division, Congressional Research Service, Library of Congress. 96th Cong., 1st sess. Washington, U.S. Govt. Print. Off., 1979. Third Ed. p. 73-112. (Committee print.)

[14] See also: Buck, Peter. Adjusting to Military Life: The Social Sciences go to War, 1941-1950. *In* Smith, Merritt Roe, ed., Military Enterprise and Technological Change: Perspective on the American Experience. Cambridge, The MIT Press, 1985. p. 203-252.

[15] Nelson, Stephen D. Institute of Medicine. A Brief History of the Development of the National Institutes of Health, Oct. 1984. Washington, National Academy Press, typescript. p. 9, 14.

[16] Brooks, Sponsorship and Social Science Research, op. cit., p. 81-82.

[17] Statement of George A. Lundberg. The Senate Ponders Social Science. The Scientific Monthly, May 1947, p. 399 as cited in: Chapter Five—Inclusion of the Social Sciences in the Scope of the National Science Foundation, 1945-47: A Groundwork for Future Partnership. *In* Technical Information for Congress, op. cit., p. 120.

[18] Miller, Roberta Balstad. The Social Sciences and the Politics of Science: The 1940s. The American Sociologist, v. 17, 1982: 205-209 and Zuiches, James J. The Organization and Funding of Social Science in the NSF. Sociological Inquiry, v. 54, Spring 1984: 188-210. See also England, J. Merton. A Patron for Pure Science. Washington, U.S. Govt. Print. Off., 1982. (NSF 82-84.)

Very early, the National Science Foundation outlined the criteria which were to govern support for the social sciences and which continue to prevail today, thirty-five years later. An NSF official recommended that to be eligible for support "[projects] should be methodologically rigorous, important for national welfare and defense, convergent with the natural sciences, and characterized by objectivity, verifiability and generality." [19]

Skepticism within the Congress and within the NSF about the "scientific" nature of the social sciences led to a pattern of slow incremental growth for the psychological and social sciences in NSF. Support for these fields gradually increased in NSF, so that by 1958, when the Foundation created a Social Sciences Research Program, the social sciences were awarded approximately $600 thousand annually. Funding for psychology was not reported separately. See tables 13 and 14. NSF funding for psychological and social sciences increased gradually and steadily over the years, to about $64 million annually in the period 1976 to 1979, and thereafter fell to about $39 million in 1982, with the cuts instituted by the Reagan Administration. For the fiscal year 1986, behavioral and social sciences were allocated about $53 million or 3.8 percent of NSF's research support budget, about one-half the percentage levels allocated in the late 1970s.

NSF's "permissive," or tacit, responsibility to support these disciplines was expanded in 1968, when the Congress revised NSF's organic act to, among other things, make explicit the foundation's responsibility to support social sciences research and applied research. (P.L. 90–407, July 18, 1968.) However, the type and objectives of NSF's support programs in the areas of behavioral and social science research have, after some exceptions in the 1970s, continued to focus primarily on quantitatively or theoretically oriented studies, in response to continuing apprehensions about NSF supporting policy-oriented research.

It should be pointed out that although some few behavioral and social scientists were made members of the National Academy of Sciences in the 1960s, it was not until the Academy's 1971 annual meeting that its membership voted to make eligible for membership a class of scientists in the "behavioral and social sciences."

Doubts and criticisms about the scientific nature of the social sciences continue to characterize support for these fields in NSF and in congressional funding debates up through the early 1980s. According to William Wells, a former staff member of the House Committee on Science and Technology, "Leigh Shaffer has quoted Senator William Proxmire as saying in an interview with the *APA Monitor*, 'It's too bad they're called sciences, because they are not quite. I don't know what they are. They're somewhere between science and art.' This is a view which spans 40 years of science policy debates." [20]

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[19] Brooks, Sponsorship and Social Science Research, op. cit., p. 82, and England, op. cit., p. 267.

[20] Wells, William G., Jr. Politicians and Social Scientists: An Uneasy Relationship. American Behavioral Scientists, v. 26, Nov./Dec. 1982: 240.

NSF director John Slaughter, in 1981, described the cautious nature of support provided by NSF for the behavioral and social sciences:

> The Foundation's programs have concentrated on that small fraction which is of fundamental, theoretical, or empirical interest, is not directly tied to any particular mission interest, and promises generalizations beyond the single problem or case focus.[21]

E. Research for the "Great Society" Programs in the 1960s

During the 1960s the notion of "social engineering" became accepted in Government. This was the view that technology and/or social science information could be used to design government policies to solve social and political problems. The techniques and promises of operations research and systems analysis, which had been used in the military, became prevalent in social policy. For instance, the Rand Corporation which had been been created after World War II to serve the Air Force, developed a research branch "to perform analyses of New York's service delivery problems and improve the efficiency with which its human and physical resources were being used."[22] The political climate shifted markedly to favor governmental intervention to deal with social problems during the Kennedy-Johnson years. This led to attitudes conducive to the utilitization of social research in policymaking. Early work in using operations research activities to deal with social problems was followed by the application of computer simulation and use of statistical methods and modelling. This helped generate governmental enthusiasm and support for using social research in "a series of large-scale social experiments designed to explore the impact on employment incentives of a negative income tax, and similar experiments to test housing vouchers and schools vouchers as alternativs for introducing market-like mechanisms in the administration of social programs."[23]

During this period, the passage of the Great Society legislation and the creation and/or expansion of the applied social research programs of several mission agencies was based on the premise that social science could contribute to the design and evaluation of government programs to combat urban decay, crime, difficulties with housing, unequal employment, and "Wars of National Liberation." Federal support for behavioral and social research increased by 96 percent, from about $118 million to $231 million during the period 1962 to 1965. Most of this was for applied research. See table 2 and chart A. During the 1960s the Nation also witnessed the cre-

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[21] Testimony by John B. Slaughter before the Subcommittee on Science, Research, and Technology, House Committee on Science and Technology, Mar. 12, 1981. p. 6.

[22] Brooks, Sponsorship and Social Science Research, p. 82.

[23] Brooks, Sponsorship and Social Science Research, op. cit., p. 82. See the following books by Clark C. Abt, for an overview of the outcomes of some of these experiments: Conference on Social Programs Evaluation. The Evaluation of Social Programs. Beverly Hills, Calif. Sage Publications, 1976. 503 p.; Perspectives on the Costs and Benefits of Applied Social Research. Washington. Council for Applied Social Research, 1979. 288 p.; Applied Research for Social Policy. Cambridge, Mass., Abt Books, 1979. 322p.; and Problems in American Social Policy Research. Cambridge, Mass., Published for the Council for Applied Social Research by Abt Books, 1980. 289 p.

ation of the Department of Housing and Urban Development and the expansion of other programs and offices for social research in the Departments of Health, Education and Welfare, Labor and Justice. It was also during this period that numerous applied social science research companies were created to do governmental contracts in the social policy area. Examples of these firms are Abt Associates, Mathematica, and the MITRE Corporation.

By 1978, it was estimated that the Federal Government was allocating about $1.8 billion annually to the production and use of social knowledge.[24]

The social information needs of Federal social policy agencies have led to the growth of a major new field of applied social science—program evaluation—and the proliferation of a broad literature in the field. Congress specified in some legislation that evaluations were to be conducted, and, in others, mandated that a minimum of one percent of program funds were to be awarded for the conduct of evaluations.[25] Several congressional inquiries were conducted during this period on the potential utility of these fields to program and policy making.[26]

Social experimentation and program planning and evaluation efforts have not been entirely successful. It is generally conceded that the experiments did provide good data but their solutions often were rejected by decisionmakers for various reasons, among them, ". . . the contemplated social policies from which they had derived their motivation had run out of political steam by the time the results of the experiments were available, and a number of the questions being addressed by the experiments were obsolete from the point of view of the different sort of political options then being considered." [27] For instance, one major study, of income dynamics, traced economic behavior over time, and concluded that people move in and out of poverty, and that a Government supplied income supplement to poor people would create little disincentive to work for primary wage earners, but slightly more for secondary wage earners.[28] By the time the results of this study were released, prevailing political attitudes had shifted toward seeking "workfare" programs.

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[24] Abramson, Mark A. The Funding of Social Knowledge Production and Application: A Survey of Federal Agencies. Washington. National Academy of Sciences, 1978. passim.

[25] Knezo, Genevieve J. Program Evaluation: Emerging Issues of Possible Legislative Concern Relating to the Conduct and Use of Evaluation in the Congress and the Executive Branch. Nov. 1975. Congressional Research Service Multilith 75-35 SP, pp. 499-581 In U.S. Congress. Senate. Committee on Government Operations. Subcommittee on Oversight Procedures. Legislative Oversight and Program Evaluation. A Seminar Sponsored by the Congressional Research Service. 94th Congress, 2nd sess. Washington, U.S. Govt. Print. Off., May 1976. Committee print.

[26] See for instance: the series of studies by the Research and Technical Programs Subcommittee on the House Committee on Government Operations, entitled *The Use of Social Research in Federal Domestic Programs*, 90th Congess, 1st session, 1967, (The Reuss Inquiry) and the Extensive series of studies and hearings under the direction of the Joint Economic Committee during the 89th and 90th Congresses (1966-1968), on the subject of Federal Programs for the Development of Human Resources.

[27] Brooks, Sponsorship and Social Science, op. cit., p. 83.

[28] Duncan, Greg. Years of Poverty; Years of Plenty. Ann Arbor, Institute for Social Research, Univ. of Michigan, 1984.

TABLE 2—FEDERAL OBLIGATIONS FOR RESEARCH IN BEHAVIORAL AND SOCIAL SCIENCES BY CHARACTER OF WORK, FISCAL YEARS 1952–86

[In thousands of dollars]

	1952	1953	1954	1955	1956	1957	1958	1959	1960
Total research, social, and behavioral sciences	10,245	39,269	21,695	25,198	30,104	36,246	39,743	30,959	34,854
Total social and behavioral sciences research in universities and colleges	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total applied research, social and behavioral sciences	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total basic research, social and behavioral sciences	NA	1,821	937	2,117	3,473	4,755	8,733	15,392	25,287
	1961	1962	1963	1964	1965	1966	1967	1968	1969
Total research, social, and behavioral sciences	44,405	118,025	152,305	198,970	230,868	265,946	292,660	288,895	313,760
Total social and behavioral sciences research in universities and colleges	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total applied research, social and behavioral sciences	NA	NA	91,195	117,528	136,174	168,277	184,904	182,616	194,759
Total basic research, social and behavioral sciences	32,340	45,582	61,110	81,442	94,694	97,669	107,756	106,279	119,001
	1970	1971	1972	1973	1974	1975	1976	1977	1978
Total research, social, and behavioral sciences	319,839	12,015	423,220	408,714	425,615	444,008	536,452	582,326	666,153
Total social and behavioral sciences research in universities and colleges	NA	NA	NA	NA	147,465	146,071	177,307	195,861	211,794
Total applied research, social and behavioral sciences	207,845	295,743	291,697	283,153	304,660	301,609	404,497	436,096	474,333
Total basic research, social and behavioral sciences	111,994	116,272	131,523	125,561	120,955	132,399	131,955	151,230	208,396
	1979	1980	1981	1982	1983	1984 (est.)	1985 (est.)	1986 (est.)	
Total research, social, and behavioral sciences	724,694	722,820	706,325	604,335	676,139	703,011	755,461	721,747	
Total social and behavioral sciences research in universities and colleges	228,031	227,122	339,842	197,006	224,449	223,920	250,552	242,185	
Total applied research, social and behavioral sciences	519,907	491,434	478,382	394,262	445,489	462,569	491,660	457,889	
Total basic social and behavioral sciences	204,787	231,386	227,943	210,073	230,650	240,442	263,801	263,858	

NA—Not available. Source: Compiled from NSF data, historical series.

TABLE 3.—FEDERAL OBLIGATIONS FOR RESEARCH IN BEHAVIORAL AND SOCIAL SCIENCES AT UNIVERSITIES AND COLLEGES, BASIC AND APPLIED, FISCAL YEARS 1973–86

[In thousands of dollars]

	1973	1974	1975	1976	1977	1978	1979
Basic behavioral and social sciences	NA	69,944	68,322	72,585	83,897	96,724	99,865
Applied behavioral and social sciences	NA	77,524	77,749	104,722	111,874	120,070	128,166
Total	NA	147,468	146,071	177,307	195,771	216,794	228,031
	1980	1981	1982	1983	1984 (est.)	1985 (est.)	1986 (est.)
Basic behavioral and social sciences	116,372	114,804	94,389	112,597	112,925	126,930	127,976
Applied behavioral and social sciences	110,750	115,684	102,617	111,922	110,995	123,622	114,209
Total	227,122	230,488	197,006	224,519	223,920	250,552	242,185

NA—Not available.

Source: NSF data series: Federal Funds for Research and Development: Federal Obligations for Research to Universities and Colleges by Agency and Detailed Field of Science.

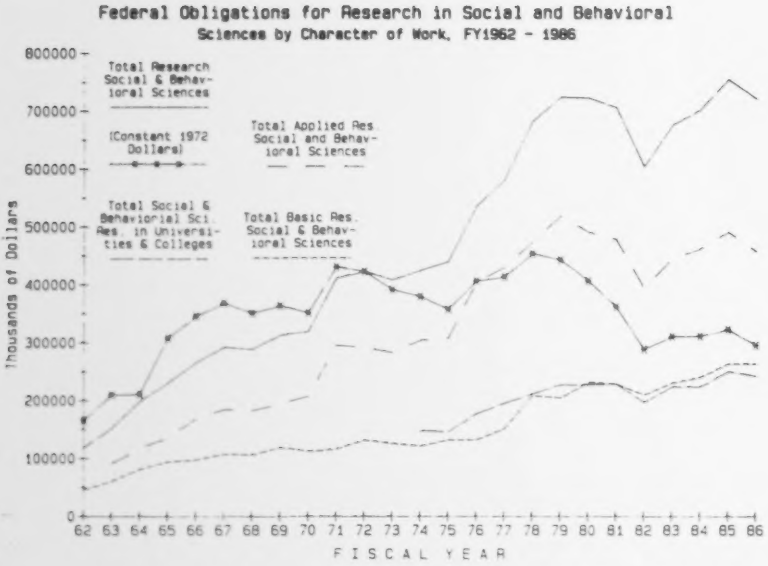
Federal Obligations for Research in Social and Behavioral Sciences by Character of Work, FY1962 - 1986
Total Research Social & Behavioral Sciences
(Constant 1972 Dollars)
Total Applied Res. Social and Behavioral Sciences
Total Social & Behavioral Sci. Res. in Universities & Colleges
Total Basic Res. Social & Behavioral Sciences
Thousands of Dollars
800000
700000
600000
500000
400000
300000
200000
100000
0
62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86
FISCAL YEAR

CHART A

F. THE RANN PROGRAM IN THE NATIONAL SCIENCE FOUNDATION

The prevailing expectations of the late 1960s and early 1970s about "social engineering" and using social knowledge to solve social problems were reflected also in the initiation of a large applied research program in NSF, in 1971, called the Research as Applied to National Needs Program (RANN). This program reflected the premise that technological solutions and "social engineering" could help stave off urban blight and invigorate the service sector of the cities. NSF awarded funds totaling about $484 million to the program during the period 1971 to 1978, when the program was terminated because of management and political problems.[29]

However, applied social research funding had been funded at high levels in the RANN program, to the extent that some social scientists perceived it was a threat to NSF's basic social science research program. According to Otto Larsen, an NSF official,

> In its six-and-a-half-year life to 1977, RANN allocated $468.3 million. Each year its budget for applied social sci-

[29] Knezo, Genevieve and Kenneth Bogen. The National Science Board: Science Policy and Management for the National Science Foundation. Report Prepared by the Science Policy Research Division, Congressional Research Service, Library of Congress for the Subcommittee on Science, Research and Technology, House Committee on Science and Technology. 98th Cong., 1st sess. Washington, U.S. Govt. Print. Off., 1983. Committee Print, p. 227-228. See also Social and Behavioral Science Programs in the National Science Foundation: Final Report. By Committee on the Social Science in the National Academy of Sciences, 1976. 103 p.

ence research was more than that expended for basic research in the Division of Social Science.[30]

G. Defense Department Social Research

Defense Department social research in the 1960s included projects by American social scientists to study the sociopolitical factors which might promote or deter counterrevolutionary movements in Latin America, Vietnam, and other countries and to develop recommendations about how to halt such movements. A study called Project Camelot, dealt with Chile. Despite the views of some social scientists that this kind of information was crucial for U.S. security and wholly within the realm of ethically acceptable social research,[31] the project was halted after charges by some politicians and social scientists that the project was unethical and that social scientists should not interfere in the social affairs of other countries. Some believe that curtailing this kind of research (which also had been conducted in Southeast Asia) left lingering inadequacies in American understanding of the cultures of foreign countries and ultimately handicapped U.S. capabilities to anticipate and respond effectively to counterrevolutionary movements in Vietnam and the Middle East.

The episode also generated several self-critiques by social scientists and attempts by some of the professional social science associations to develop codes of ethics for social research. These have been discussed, for instance by Myrdal,[32] Sjoberg,[33] Beals,[34] Lipset,[35] and Horowitz.[36]

The furor about Project Camelot in 1965 occurred contemporaneously with the growing student opposition to the war in Vietnam and to university conduct of Defense Department classified research or to campus research that led to weapons. Campus riots, bombings, and other violent acts during the late 1960s were directed against laboratories and professors who were DOD grantees or contractors. This action occurred during an era of decreasing DOD attention to the conduct of basic research in favor of using scarce budgetary resources for the Vietnam War.[37] The Congress reacted to these actions and others by enacting the Mansfield Amendment in 1969. This legislation and its modified, more liberal successor the following year, basically prohibited the DOD and, some say

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[30] Larsen, Otto N. Social Science Out of the Closet. Society, Jan./Feb. 1985: 14.

[31] Deitchman, Seymour J. The Best-Laid Schemes: A Tale of Social Research and Bureaucracy. Cambridge, The MIT Press, 1976, 483 p.

[32] Myrdal, Gunnar. Objectivity in Social Research. New York, Panetheon Books, 1969, 111 p.

[33] Ethics, Politics, and Social Research. Edited by Gideon Sjoberg, Cambridge, Schenkman Publishing Co., Inc., 1967, 358 p.

[34] Beals, Ralph L. Politics of Social Research: An Inquiry Into the Ethics and Responsibilities of Social Scientists, Chicago, Aldine Publishing Co., 1969, 228 p.

[35] Lipset, S.M. Politics and the Social Sciences. New York, Oxford University Press, 1969, 328 p.

[36] Horowitz, Irving Louis., ed. The Rise and Fall of Project Camelot: Studies in the Relationship Between Social Sciences and Practical Politics. Cambridge, Mass., The MIT Press, 1967, 409 p.

[37] See Horowitz, Irving Louis, and James Everett Katz. Social Science and Public Policy in the United States. New York, Praeger, 1975. p. 102–111 and Horowitz, The Rise and Fall of Project Camelot. op. cit., passim.

other Federal agencies, from sponsoring basic research not specifically related to their missions.[38]

These actions contributed to cutbacks in the Department of Defense's social science research programs. Funding for social research was cut 42 percent between 1967 and 1970 (in terms of constant 1972 dollars) and has never been restored to the 1967 level. However, some social scientists played continuing roles in designing the "limited war doctrine" in Vietnam and assisted in Agency for International Development Programs. See tables 19 and 20.

In addition, congressional reaction and criticism to the Camelot episode [39] resulted in a Defense Department announcement that in the future, foreign countries would have to approve DOD surveys and social research conducted within their borders; in the shifting of resources from DOD to the State Department for the conduct of related "foreign area" research; and in the creation of several interagency coordination groups, such as Foreign Affairs Research Council and the Interagency Foreign Area Research Coordination Group to review projects for political sensitivity.[40] The National Academy of Sciences and the Defense Science Board also studied this issue. (DOD's support of behavioral science is substantial and focuses on personnel policies, all volunteer forces, human factors, ergonomics, and so forth.)

H. Proposals To Institutionalize Behavioral and Social Sciences in Government

The Camelot and Vietnam episodes also triggered a general examination of how the Government might better support and use the social sciences in policymaking. Congressman Dante Fascell, chairman of the subcommittee which held hearings on Camelot, introduced three related bills, in June 1966. One proposed a White House Conference on the Social and Behavioral Sciences. The second would have established an Office of Social Sciences in the Executive Office of the President, modeled on the Office of Science and Technolgy, to advise the President on the priorities, coordination and use of federally supported behavioral and social research programs. The third would have created a National Social Science Foundation as a counterpart to the National Science Foundation to support and guide the development and use of these disciplines. Senator Fred R. Harris introduced a counterpart bill in the Senate to create a National Social Science Foundation. Extensive hearings were held on the proposal, but many social scientists opposed it because they feared that the social sciences would be more vulnerable

[38] The original Mansfield Amendment was P.L. 90-121, sec. 203. The modified Mansfield amendment is P.L. 91-441, sec. 204. The view that the amendment affected the research activities of other agencies is found in: Statement of National Science Board chairman, Philip Hander In: U.S. Congress. House. Committee on Science and Astronautics. Subcommittee on Science, Research, and Development. 1971 National Science Foundation Authorization. Hearings, 91st Congress, 2d session. Washington, U.S. Govt. Print. Off., 1970, pp. 16-17.

[39] Hearings and reports are described in Chapter Six. Congressional Response to Project Camelot. U.S. Congress. House. Committee on Science and Astronautics. Subcommittee on Science, Research, and Development. Technical Information for Congress. Report prepared by the Science Policy Research Division, Congressional Research Service, Library of Congress, Apr. 25, 1969, revised Apr. 15, 1971. 92nd Congress, 1st session. Washington, U.S. Govt. Print. Off., 1971. pp. 126-160. (Committee print.)

[40] Ibid., p. 154.

to attack and budget cuts if separated from support of the other sciences in the National Science Foundation.[41]

A few years later, on July 18, 1968, after considerable study and the passing of enough time to allow some demonstration of the "scientific nature" of the social and behavioral sciences to previously skeptical physical and natural scientists, the Congress modified the National Science Foundation enabling legislation to, among other things, include social sciences as an explicit area for support. In addition in February 1968, President Johnson expanded the President's Science Advisory Committee by appointing Herbert Simon, the first social scientist ever to be appointed to that group.

Formal attempts to institutionalize social research in decision-making were prevalent during the 1960s and early 1970s. In 1970, the Senate Committee on Labor and Public Welfare held a hearing on a bill to create the George Washington Memorial Institute for the Social Sciences, to support and conduct policy-relevant social research.[42] The bill had been introduced by Senator George McGovern. A House companion bill was introduced by Rep. Thomas Foley. No further action was taken.

I. Social Indicators Activities

The "social indicators movement" during the 1960s and 1970s was another manifestation of the view that if there were better information describing society and its changes, then policymakers would be able to use it to develop more effective programs and policies. The earliest Federal funding for research on social indicators was awarded by the National Aeronautics and Space Administration to a social scientist to study the impact of the space program on society. Subsequently, in 1966 President Lyndon B. Johnson, in his Message on Health and Education, instructed the Secretary of Health, Education and Welfare to marshall an interdepartmental effort to collect and develop a set of social statistics and indicators for a presidential social report.[43]

Thereafter, several of the social science study commissions (discussed in this report in Chapter VII), recommended the institutionalization of a social indicators function and unit in Government analogous to the use of economic indicators and the advisory functions of the Council of Economic Advisors.[44] Hearings were held in 1967, 1969, 1970, and 1971 on congressional proposals introduced to create a Council of Social Advisors and a social indicators monitoring function, but the bills were never enacted.[45]

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[41] U.S. Congress. Senate. Committee on Government Operations. National Foundation for Social Sciences. Hearings on S. 836. 1967. 90th Cong., 1st sess. Washington, U.S. Govt. Print. Off., pt. 1, 261 p.; pt. 2, p. 263-497; pt. 3, 499-808.

[42] U.S. Congress. Senate. Committee on Labor and Public Welfare. Subcommitte on Evaluation and Planning of Social Programs. George Washington Memorial Institute for the Social Sciences. Hearing. 91st Congress, 2nd session on S. 3983, To provide for the establishment of the George Washington Memorial Institute for the Social Science. Washington, U.S. Govt. Print. Off., 1970, 94 p.

[43] Gross, Bertram M. ed., Social Intelligence for America's Future. Explorations in Societal Problems. Boston, Allyn and Bacon, Inc. 1969, p. ix.

[44] See especially the BASS report. The Behavioral and Social Sciences: Outlook and Needs. Washington. National Academy of Sciences, 1969. 320 p.

[45] U.S. Congress. Senate. Committee on Government Operations. Subcommittee on Government Research. Full Opportunity and Social Accounting Act. Hearings on S. 843. 90th Congress,

The National Science Foundation began a 12-year program of support for research on social indicators in 1969. There seemed to be general agreement, according to the NSF official in charge of these programs, that by 1981 ". . . this . . . entire line of research had reached the limit permitted by both the state-of-the-art and the levels of funding which could justifiably be invested in it."[46] A coordinated NSF program was terminated, although research has been continued under the support of private foundations and as part of the regular research programs at NSF.[47]

Several social indicators reports were published by the Executive branch of Government during the late 1960s and early 1970s. In fact, in 1969, President Nixon established the National Goals Research Staff in the White House to forecast and monitor social trends on the quality of life of the American people. Later, the Department of Health, Education, and Welfare and the Office of Management and Budget took over the social indicators reporting activity and prepared three social indicators reports.[48] But, the reports published by these agencies were criticized, and defended, because of lack of consensus about what social categories should be monitored by Government.

J. Social Impact Assessment

Beginning in the 1960s, social research came to be viewed as an important part of the growing movement to stem environmental degradation and to monitor the excesses of technological application. Environmental impact statements mandated by section 102 (2)(B) and 204 of the National Environmental Policy Act of 1969, P.L. 91-190, were determined by judicial interpretation to require assessments of the "human environment"[49] and to include cost-benefit analyses, which often contained social impact assessments. Social scientists increasingly were called upon to participate in writing environmental impact assessments.

In 1972, the Congress passed legislation which declared that ". . . it is necessary for the Congress to . . . equip itself which new

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1st sess. 3 volumes: Parts 1, 2, 3. Washington, U.S. Govt. Print. Off., 1967. U.S. Congress. Senate. Committee on Labor and Public Welfare. Special Subcommittee on Evaluation and Planning of Social Programs. Full Opportunity Act. Hearings on S. 5, 1969 and 1970. 91st Congress, 1st and 2nd sess. Washington, U.S. Govt. Print. Off., 1979, 439 p.; and ———. Full Opportunity and National Goals and Priorities Act. Hearings on S. 5, 92nd Congress, 1st sess. 1971. Washington, U.S. Govt. Print. Off., 1971, 190 p.

[46] Aborn, Murray. The Short and Happy Life of Social Indicators at the National Science Foundation. Social Science Research Council Items. Sept. 1984, v. 38: 40. See also: The Council's Program in Social Indicators: A Special Issue. Social Science Research Council Items, Dec. 1983, v. 37, whole issue.

[47] A private group, some of whose members had been affiliated with the Russell Sage Foundation, now publishes a newsletter in this field: SINET: Social Indicators Network News. P.L. Box 24064, Emory University Station, Atlanta.

[48] The first such volume was: U.S. Department of Health, Education, and Welfare. Toward a Social Report. Washington, U.S. Govt. Print. Off., 1969, 101 p. The three social indicators reports prepared for the OMB were: Social Indicators, 1973. Selected Statistics on Social Conditions and Trends in the United States. Written and compiled by the Statistical Policy Division, Office of Management and Budget, and prepared for publication by the Social and Economic Statistics Administration, U.S. Department of Commerce. Washington, U.S. Govt. Print. Off., 1973, 258 p.; Social Indicators, 1976. Selected Data on Social Conditions and Trends in the United States, Washington, U.S. Govt. Print. Off., 1977, 564 p.; and Social Indicators III. Selected Data on Social Conditions and Trends in the United States. Washington, U.S. Govt. Print. Off., 1980, 585 p.

[49] Curlin, James. The Role of the Courts in the Implementation of NEPA. In Blissett, Marlan, ed. Environmental Impact Assessment. New York, Engineering Foundation, 1975, pp. 27-44.

and effective means for securing competent, unbiased information concerning the physical, biological, economic, social, and political effects of [technological] . . . applications." The law created the Office of Technology Assessment, to provide the Congress with information about technological impacts. (P.L. 92-484, Oct. 13, 1972.)

These and related activities gave rise to a new school of thought or emphasis within the social sciences, called "social impact assessment," which attempts to provide socio-economic measures of environmental and technological changes and activities.[50]

K. Evaluation Activities in Congress

Congressional recognition of the potential utility of social research was reflected in two actions during the 1970s, both initiated pursuant to the passage of the Congressional Budget and Impoundment Control Act of 1974 (P.L. 93-344, July 12, 1984). One was the creation of the Congressional Budget Office, to provide the Congress with economic analyses and data to improve the budget-making process. The other was to give the General Accounting Office added responsibilities to provide assistance to the Congress in using program evaluations. Subsequently, the General Accounting Office created an Institute for Program Evaluation, which helps other GAO units improve the quality of GAO evaluation information to Congress, recommends improvements of evaluation methodology to executive agencies, and prepares syntheses of evaluations conducted for executive agencies.

L. Criticisms and Cuts in Social Science Research Budgets Beginning in the Late 1970's

The initial enthusiasm for using social information in policymaking—whether via social indicators, the RANN program, social impact assessment, or in social program planning and evaluation—diminished during the 1970s. A variety of factors contributed, including overenthusiastic and unfulfilled expectations; disillusionment with behavioral and social scientists, who, some policymakers concluded, had engineered the "Great Society", which was viewed by many as a failure; and economic slowdown and burgeoning deficits, which tended to change the political climate and to limit policy options, effectively foreclosing consideration of some of the social and equity issues raised in social science analyses. There was also frustration with foreign and economic aid and national security policies to which social science inputs had been perceived to be substantial but which seemed to exacerbate distrust. Yet in all these areas social science research and analysis methodology was used to critique past policies and performance.

In terms of constant (1972) dollars, Federal funding for behavioral and social science research reached a high in fiscal year 1971, then fell until 1976, when funding started to increase. The increasing trend lasted until 1978, when it started to drop precipitously, with funding for the period 1982-1985 going below even the fund-

[50] See, for example, Finsterbusch, Kurt and C.P. Wolf. Methodology of Social Impact Assessment. Stroudsburg, Pa., Dowden, Hutchinson, and Ross, Inc., 1977, 387 p. See also the newsletter Social Impact Assessment, Box 587, Canal Street Station, New York.

ing levels of the 1960s. See table 4 and chart B. Otto Larsen, a senior advisor on social and behavioral sciences at the National Science Foundation, discussed the implications of this trend for NSF funding and noted that while there were cuts for behavioral and social science research, funding for other areas of science increased:

> The strong budget cuts of 1981–1982 were a punctuation of a process underway. This can be seen by noting that in constant (1972) dollars, the obligations for social science research at NSF never again exceeded the 1976 level in any of the following years through 1984. For the nine-year period, 1976–84, the decline for social science in current dollars was 4.6 percent and in constant dollars it was 44.5 percent. While support for social science was going downhill . . . for a decade, increased support for all other areas of science at NSF was accelerating. For example, in that same time period support for biology increased 120.3 percent in current dollars and 28.1 percent in constant dollars.[51]

In fact, in certain quarters the lack of enthusiasm for the social sciences was so great that the House passed legislation introduced by Representative John Ashbrook, in 1979, that some suspected had an underlying intent of " 'gutting' the social science program" in the National Science Foundation. Mr. Ashbrook's stated purpose was to eliminate the purported low quality social research grants NSF awarded, to avoid duplication and competition with private research, and to cease the support of ideologically based research—in the words of Mr. Ashbrook, "the crucial issue of subsidies for particular philosophical views." [52] Mr. Ashbrook gave the following as examples:

> . . . We have seen how scholarly works have been used to launch major new government policies or programs over recent years. It was a study on the learning abilities of school children that launched the nightmare of busing. It was a series of computer runs that helped launch an effort to eliminate the electoral college. . . . What happens if the NSF ends up funding a series of projects that build momentum for one set of public policy views over another? [53]

According to an on-the-scene observer, William Wells, a former staff member of the House Committee on Science and Technology, "defective wording in the amendment applied the cut to the entire line-item of the biological, behavioral, and social sciences—and ultimately the cut was restored in conference with the Senate. But this incident was only a mild example of what lay ahead."[54]

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[51] Larsen, Otto N. Social Science Out of the Closet. Society. Jan./Feb. 1985: 14.
[52] Zuiches, James J. The Organization and Funding of Social Science in the NSF. Sociological Inquiry, v. 54, Spring 1984: 194.
[53] Ashbrook, John M. A Critique of NSF. Society, Sept./Oct. 1980:
[54] Wells, William G. Jr., Politicians and Social Scientists: An Uneasy Relationship. American Behavioral Scientist, v. 26, Nov./Dec. 1982: 239.

M. Changes in Policies for Behavioral and Social Science Research in the Reagan Administration

Cuts in funding for some kinds of behavioral research and most social research were accelerated and became a major policy issue beginning 1981, with the advent of the Administration of President Ronald Reagan. The Administration made major cuts and redirected most Federal behavioral and social sciences research support programs. In the fiscal year 1980, the Government obligated $772.8 million for the support of basic and applied behavioral and social research. In 1982, the total obligational level had decreased to $604.3 million. In terms of current dollars, budget levels were not restored to equal or exceed the FY 1980 levels for most agencies until the FY 1984 budget; however, changes had been made in research priorities. In terms of constant dollars the FY 1985 level is 24 percent below the FY 1980 level. See table 4 and chart B.

TABLE 4.—FEDERAL OBLIGATIONS FOR RESEARCH IN BEHAVIORAL AND SOCIAL SCIENCE

[In thousands of dollars]

Fiscal year	Current dollars	Constant 1972 dollars
1962	118,025	165,301
1963	152,305	209,787
1964	198,970	271,076
1965	230,868	307,824
1966	265,946	345,384
1967	292,600	368,589
1968	288,895	351,027
1969	313,760	363,991
1970	319,839	351,471
1971	412,015	430,978
1972	423,220	423,220
1973	408,714	391,489
1974	425,615	379,674
1975	441,008	357,671
1976	536,452	406,711
1977	582,326	413,584
1978	682,729	454,244
1979	724,694	443,238
1980	722,820	406,993
1981	706,325	361,662
1982	604,335	288,741
1983	676,139	310,726
1984	703,011	311,205
1985	755,461	322,750
1986	721,747	295,496

Source: NSF data. The abrupt increase in funding in the late 1970s was attributed by D. Gerstein, National Research Council, National Academy Sciences to NSF reclassifying certain Office of Economic Opportunity nutrition programs as "applied sociology research" and designating certain Office of Education vocational guidance programs as "social sciences, n.e.c." These program funds apparently were not afterward always reported as social sciences research.

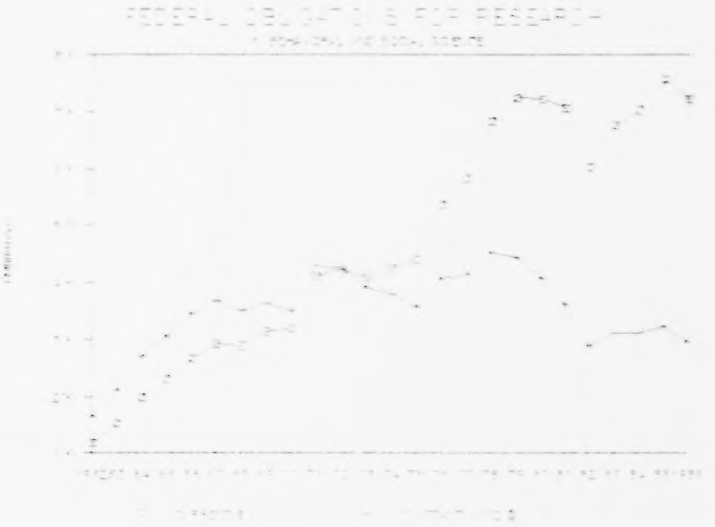

CHART B

As shown in tables 5 and 6 and chart C, cuts were made essentially only in social sciences research, since over the period 1980 to 1985, estimated funding for psychological sciences research increased some 48 percent. However, cuts were made in NSF support programs, with funding levels not restored until the FY 1986 budget.

TABLE 5.—FEDERAL OBLIGATIONS FOR TOTAL RESEARCH IN THE SOCIAL AND BEHAVIORAL SCIENCES, FISCAL YEARS 1952–61

[In thousands of dollars]

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
Federal Obligations for Total Research in the Social and Behavioral Sciences										
Total, all agencies	10,245	39,269	21,695	25,398	30,104	36,249	39,743	55,313	73,095	95,060
Total, social sciences [1]	10,245	39,269	21,695	25,398	30,104	36,249	39,743	30,959	34,854	44,405
Total, psychological sciences [2]	([3])	([3])	([3])	([3])	([3])	([3])	([3])	24,354	38,241	50,655
Federal Obligations for Total Basic Research in the Social and Behavioral Sciences										
Total, all agencies	NA	1,821	937	2,117	3,473	4,755	8,733	15,342	25,287	32,340
Total, social sciences	NA	1,821	937	2,117	3,473	4,755	8,733	5,238	8,149	11,439
Total, psychological sciences	NA	NA	NA	NA	NA	NA	NA	10,154	17,138	20,901

NA—Not available

[1] Most social science research sponsored by Federal Government agencies at this time was conducted in the field of psychology, and was commonly referred to as "human resources."

[2] In 1959 a separate category, the psychological sciences, was used for the first time in NSF reporting regarding Federal obligations for research.

[3] Included under social sciences.

Source: Federal Funds for Science Series (I–XI). Fiscal Years 1952–1961 NSF/Surveys of Science Resources Series.

TABLE 6.—FEDERAL OBLIGATIONS FOR TOTAL RESEARCH IN THE SOCIAL AND BEHAVIORAL SCIENCES BY DISCIPLINE, TOTAL AGENCIES, FISCAL YEARS 1962–86

[In thousands of dollars]

	1962	1963	1964	1965	1966
Total, social and psychological sciences	118,025	152,305	198,170	230,868	265,946
Total, social sciences	61,953	79,899	102,704	127,389	165,615
Anthropology	3,998	6,942	7,575	8,121	11,250
Economics	30,280	36,526	41,385	47,157	60,005
Political science	NA	NA	NA	NA	NA
Social science, n.e.c.	NA	NA	NA	NA	44,148
Sociology	6,224	13,132	16,779	25,344	50,212
Psychological sciences	56,072	72,406	96,266	103,479	100,331
	1967	1968	1969	1970	1971
Total, social and psychological sciences	292,660	288,895	313,760	319,839	412,015
Total, social sciences	189,092	195,487	217,814	212,262	303,986
Anthropology	11,194	10,719	10,613	8,642	11,705
Economics	69,151	71,667	72,981	77,702	72,782
Political science	NA	5,753	8,909	7,827	4,997
Social science, n.e.c.	60,747	71,927	80,960	80,283	109,202
Sociology	48,000	35,421	44,331	37,803	105,300
Psychological sciences	103,568	93,408	95,946	107,577	108,029
	1972	1973	1974	1975	1976
Total, social and psychological sciences	423,220	408,714	425,615	441,008	536,452
Total, social sciences	306,894	298,790	292,196	301,816	392,456
Anthropology	13,156	11,814	13,396	13,850	13,588
Economics	81,766	88,144	117,976	126,238	137,577
Political science	4,581	7,097	8,461	11,693	7,239
Social science, n.e.c.	88,013	89,662	88,069	95,128	180,406
Sociology	119,378	102,073	64,294	54,907	53,646
Psychological sciences	116,326	109,924	133,419	139,192	143,996
	1977	1978	1979	1980	1981
Total, social and psychological sciences	582,326	682,729	724,694	722,820	706,325
Total, social sciences	426,125	489,486	527,310	523,811	497,427
Anthropology	12,379	19,526	17,343	17,179	14,537
Economics	142,854	163,180	181,915	192,771	206,722
Political science	8,479	8,816	13,916	12,170	10,767
Social science, n.e.c.	210,256	237,631	249,613	230,256	200,411
Sociology	52,157	60,333	64,523	71,435	64,990
Psychological sciences	156,201	193,243	197,384	199,009	208,898
	1982	1983	1984 (est.)	1985 (est.)	1986 (est.)
Total, social and psychological sciences	604,325	676,139	703,011	755,461	721,747
Total, social sciences	385,939	435,268	436,339	462,693	417,260
Anthropology	14,564	12,799	18,579	21,607	14,730
Economics	157,102	165,551	147,298	152,303	142,334
Political science	7,534	11,147	10,750	13,084	11,682
Social science, n.e.c.	154,734	177,956	189,485	201,971	178,259
Sociology	52,105	67,815	70,227	73,728	70,225
Psychological sciences	218,396	240,871	266,672	292,768	304,487

NA—Not available.

Source: Federal Funds for Research and Development: Federal Obligations for Research by Agency and Detailed Field of Science: Fiscal Years 1967–1985. NSF/Division of Science Resources Studies. 167 p.

For instance, early in 1981, the Administration attempted to cut the NSF budget for social science research by as much as 75 percent, with cuts for NSF behavioral sciences programs only slightly less, while at the same time increasing funding for physical and biological sciences and engineering. Cuts also were proposed for most other Federal agencies which supported behavioral and social science research, including the National Institute of Mental Health, the National Institute of Justice, and the Department of Housing and Urban Development, and the social policy offices of the Department of Health and Human Services.[55] However, consistent with increases overall in defense research, funding for psychological research in the Department of Defense was increased about 70 percent.

In addition, the Administration attempted to eliminate, or severely curtail, the functions of some agencies with missions to examine national social policy options. For example, the Administration's request for research funding for the Office of the Assistant Secretary for Planning and Evaluation (ASPE) in the Department of Health and Human Services, for FY 1986, was $6 million, a drop of 75 percent from the $24 million level requested in FY 1980.[56] In July 1985, it was announced that Education Secretary William J. Bennett proposed to reorganize the Institute of Education, the Department of Education's research arm, in order, apparently to consolidate his control over the agency functions. Another motive was ascribed by the *Washington Post*, ". . . to placate members of the New Right, who have long demanded that the NIE be abolished because of what they see as its liberal tilt." [57] As discussed below a complex interplay of purposes is probable here.

In addition, constraints on social research were reflected in the actions taken by the Alcohol, Drug Abuse and Mental Health Administration of the Department of Health and Human Services, in 1982, which, after absorbing a series of budget cuts for fiscal years 1981 and 1982, redefined its mission from the support of "social science research" to the support of "behavioral science research." According to an observer this means ". . . it has explicitly distanced itself from the 'support of studies of large scale social conditions or problems,' and intends to confine itself instead to studies that are explicitly focused on mental illness or mental health. . . ." [58]

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[55] The views of some of the major OSTP participants in these budget decisions are summarized in: Chubin, Daryl E. and James L. McCartney. Financing Sociological Research: A Future Only Dimly Perceived. The American Sociologist, v. 17, Nov. 1982: 226–235.

[56] ASPE: Aspiring or Expiring. COSSA Washington Update. May 17, 1985: 3.

[57] Richburg, Keith B. Bennett Acts to Abolish Institute of Education. Washington Post, July 3, 1985: A15.

[58] U.S. Dept. of Health and Human Services. Report on Alcohol, Drug Abuse and Mental Health Administration's Social Research Policy, Memo, Feb. 3, 1982, as cited in McCartney, James L. Setting Priorities for Research: New Politics for the Social Sciences. The Sociological Quarterly, v. 25, Autumn 1984: 445.

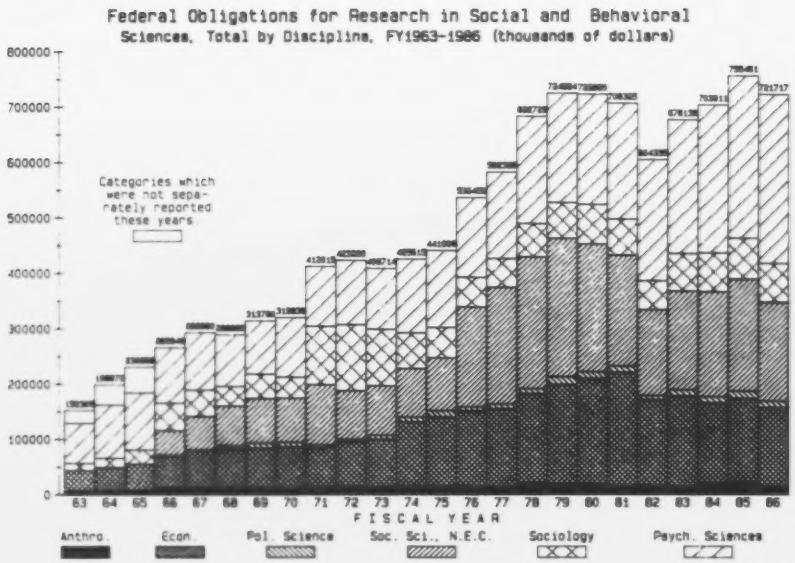

CHART C

There also have been cutbacks in funding and personnel levels for some major Federal behavioral and social science related statistical data collection and analysis efforts. In general, as of 1984, most funding levels were about 8 percent below the 1980 level even when corrected for inflation. According to a study published in 1984, actual cutbacks for data collection activities have occurred in the Health Care Financing Administration; the Federal Trade Commission; the Office of Research Statistics and International Policy in the Social Security Administration; the Statistics of Income Division of the Internal Revenue Service; the Centers for Disease Control; the National Institutes of Health; the Office of Policy Development and Research in the Department of Housing and Urban Development; the Employment and Training Administration in the Department of Labor; the Bureau of Industrial Economics, previously in the Department of Commerce; the Civil Aeronautics Board; the Interstate Commerce Commission; and the Immigration and Naturalization Service. Several agencies, which did not have clear-cut social services missions, experienced constant or slightly fluctuating levels: the Veterans' Administration, the National Science Foundation, and the National Highway Traffic Safety Board. Increases were experienced by the Environmental Protection Agency and the Occupational Safety and Health Administration. As noted above the office of the Assistant Secretary for Planning and Evaluation in the HHS experienced a 75 percent budget cut over the period fiscal years, 1980 to 1986.

It has been concluded that these cutbacks have hurt the reliability of some statistics, since there have been cuts in sample sizes, the scope of questions asked, and in the data analyses conducted.[59]

N. Rationale for Reagan Administration-Instituted Budget Cuts

It has been suggested that the Reagan Administration's accelerated cuts for these kinds of research may have resulted from assessments that some federally-funded behavioral and social science research were not productive and were not contributing much to policymaking.[60] However, according to some analyses, two other interrelated factors may be of at least equal force: the need to reduce budget deficits and the Administration's concept of justifiable Government roles and functions.

On the need to reduce budget deficits, The Office of Management and Budget, in an April 1981 document entitled *Additional Details on Budget Savings*, explained that reductions made in funding for some behavioral and social research occurred because "the support of these sciences is considered of relatively lesser importance to the economy than the support of the natural sciences." (Funding trends for the social sciences have not kept pace with funding for other scientific disciplines. For the period FY1980–FY1986, funding decreased about 20 percent for social sciences but increased the other sciences as follows: life sciences, up 44 percent; physical sciences, up 52 percent; environmental sciences, up 4 percent; mathematical sciences, up 164 percent; and engineering, up 25 percent.)[61]

Some social scientists view the cuts as ideologically-motivated as well. For example, two social scientists concluded: "The Reagan Administration's budget cutting . . . reflects two distinct impulses: a mainstream Republican desire simply to curtail government spending and a conservative desire not only to cut spending in general but also to defund the Left by eliminating especially those programs it regards as the basic source of liberal and radical social change in the United States."[62] Several other authors have delved into this issue. Wells alleged that "although only general instructions were given to various OMB offices on budget levels for hundreds of programs, [David] Stockman [first director of OMB under Ronald Reagan] issued detailed, specific 'guidance' on reducing or eliminating social and behavioral research in the NSF and other agencies."[63] Himmelstein and Zald maintain that conservative op-

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[59] Griffith, Jeanne E. Recent Trends in Federal Statistical Programs: A Summary of Findings. In U.S. Congress. House. Committee on Government Operations. The Federal Statistical Systems: 1980 to 1985. A Report Prepared by Baseline Data Corporation for the Congressional Research Service, Library of Congress. Nov. 1984. 98th Congress, 2nd sess. Washington, U.S. Govt. Print. Off., 1984, pp. 1-7. See also: Parke, Robert. Responses to Recent Cuts in Federal Budgets for Statistics. Social Science Research Council Items, v. 36, June 1982: 12-13.

[60] See, for example, testimony of Clark Abt. Hearings on Behavioral and Social Science before the Science Policy Task Force, House Committee on Science and Technology, 1985, p. 2.

[61] Figured from table B. U.S. National Science Foundation. Federal Funds for Research and Development. Federal Obligations for Research by Agency and Detailed Field of Science. Fiscal Years 1967-1986. p. 30-31.

[62] Himmelstein, Jerome L. and Mayer Zald. American Conservatism and Government Funding of the Social Sciences and the Arts. Sociological Inquiry, v. 54, Spring 1984: 173.

[63] Wells, op. cit., passim.

position to Government funding for socially activist programs has led to cuts. They catalogued numerous alleged examples.[64] Also, there were allegations that the Administration has staffed some of the social research organizations with "sympathizers" of the Right Wing, and that this has hurt social research programs.[65]

It should also be pointed out that the Administration may have determined that cuts were warranted because of the lack of quality and utility of some behavioral and social science research. See chapter IX of this report.

O. The Positive and Negative Effects of Changes in Funding

These changes in funding appear to have had a range of effects. These developments led to cutbacks in the success rates of proposals in many areas of behavioral and social research, to smaller sized awards,[66] and to the termination of support for some kinds of cause and effect studies, in favor of studies that are quantitative in nature or oriented to enhancing databases. F. Thomas Juster, professor of economics at the University of Michigan and director of its Institute for Social Research, identified some long range negative impacts for the behavioral and social sciences:

> Whatever the reasons may be for the Administration's negativism about basic research in the social and behavioral sciences, I believe they disregard the long-term consequences . . . for society: a lengthy period of minimal support will have a significant impact on the inflow of new talent; it will significantly reduce increments to the stock of knowledge that forms an information base for political decisions; it will seriously impede the development of new ideas that are relatively expensive and cannot get a hearing in a tightly constrained budget environment; and it will cause retrogression in the degree to which the behavioral and social sciences become more solidly grounded in empirical knowledge and thus become more useful to policymakers.[67]

The cutbacks also precipitated certain developments, which may ultimately have had a pro-social science effect on subsequent congressional decision-making and may have the potential to improve understanding of the behavioral and social sciences.

One is the recognition that social scientists need to demonstrate their worth and need to be prepared to lobby to secure funds to prove the merits of their claim on the public purse, just as others do. This is reflected in the creation of the Consortium of Social Science Associations (COSSA), in 1981. COSSA is a lobbying arm of the professional social science associations. It both mounted and marshalled an extensive information dissemination and lobbying effort by universities and associations to influence Congress directly and to increase communications between behavioral and social

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[64] Himmelstein and Zald, op. cit., passim.
[65] Kirkpatrick, Samuel A., Social Science Research Under Siege: Scarcity or Conspiracy? Social Science Quarterly, v. 64, Dec. 1983: p. 705–717. Numerous articles which have appeared in the press on these points are summarized in Zuiches, op. cit., esp. p. 200.
[66] The Impact of the Budget Cuts on NSF Programs. PS, v. 17, Summer 1984. p. 627–629.
[67] Letters: Basic Research in the Social and Behavioral Sciences. Science, v. 226, 1981. p. 610.

researchers and Members of Congress. In addition, it has identified and obtained witnesses for hearings and developed seminars and briefings to describe to politicians the accumulated contributions of behavioral and social research to understanding in areas relevant to public policy. This is a new type of lobbying organization within the field of social science policy, since it represents, for the first time, the building of a consensus and representation of a unified voice by scientists, who hold differing and conflicting views about the needs of their disciplines.[68]

A related group is the Federation of Behavioral, Psychological, and Cognitive Sciences, a coalition of behavioral scientists, which has participated in similar activities. In addition, the American Psychological Association increased its activities to provide its members and members of Congress with policy-relevant information of mutual interest, via the establishment of a "Research Network," which circulates testimony, information, and requests for lobbying to members of the American Psychological Association.[69] These groups have held congressional briefings, breakfasts, and seminars on such issues as aging, education, social science contributions to innovation, television violence and children, and human factors in military R and D. The American Sociological Association established a Commission on Sociology and Society in January 1984.[70] The Commission supports research intended to study the history of several major social policy initiatives "to illustrate how reliance on the sociological perspective might have contributed to better formulation and execution of established social programs."

One visible effect of these activities is that some social and behavioral scientists, stressing the contributions of these disciplines to technological innovation and productivity, have supported the inclusion of behavioral and social sciences research among the areas eligible for corporate research tax credits in legislation which would make permanent the R and D tax credit provisions of the Economic Recovery Tax Act of 1981, P.L. 97-34, which expired in December 1985. However, some social and behavioral scientists do not support expansion of the tax credit to their disciplines.

Also the National Science Foundation awarded funds to the National Academy of Sciences to enable social and behavioral scientists to initiate a study of priorities for funding. See chapter VII.

The National Science Board, which helps govern the National Science Foundation (NSF) apparently had not been asked its opinion before OMB imposed cuts on the NSF behavioral and social sciences programs.[71] In June 1981, shortly after the Administration

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[68] See especially: COSSA. Annual Report. October 1982: 1 and Dynes, Russell R. The Institutionalization of COSSA: An Innovative Response to Crises by American Social Science. Sociological Inquiry, v. 54, Spring 1984: 211-229. COSSA also publishes COSSA Washington Update, 20-24 times yearly.

[69] See also Cummings, Scott. The Political Economy of Social Science Funding. Sociological Inquiry, v. 54, Spring 1984: 154-170. See also Silver, Howard. COSSA: Four Years of Achievement. P.S., Summer 1985: 641-646.

[70] Commission Proposes Policy-Related Research Directions. ASA Footnotes, Apr. 1985: 6.

[71] In actual practice decision-making in the National Science Foundation is shared between the National Science Board, the NSF director, the Office of Management and Budget, and the President, with these other "actors" after playing more determinate roles than the National Science Board. See U.S. Congress. House. Committee on Science and Technology. Subcommittee on Science, Research and Technology. The National Science Board: Science Policy and Manage-

announced cuts it sought for the fiscal year 1982 budget, the Board reviewed the NSF behavioral and social science programs, and issued a statement endorsing NSF's support, which it defined as important for "enhancing the objectivity of the sciences and improving the quality of data collection and analysis." "The long-range interests of the country require a continuing base of adequate support of the social and behavioral sciences so that the research base and intellectual vitality the United States has established in these fields can be maintained and increased."[72]

The actual impact of this statement is hard to ascertain. A *Science* magazine article called it a "tepid statement."[73] It probably had some impact on subsequent NSF budgets in these disciplines, which have steadily increased so that in 1985 they are at about the nominal FY1980 level.

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ment for the National Science Foundation, 1968–1980. Report prepared by the Science Policy Research Division, Congressional Research Service, Library of Congress. Washington, U.S. Govt. Print. Off., 1983. 737 p. Committee Print.

[72] Statement on Social and Behavioral Sciences As Adopted by the National Science Board at Its 227th Meeting, June 17–19, 1981.

[73] Holden, Constance. Science Board Cautiously Supports Research. Science, July 31, 1981: 525.

III. THE MAJOR FIELDS OF BEHAVIORAL AND SOCIAL SCIENCES

This chapter describes some of the major fields of federally supported behavioral and social research focussing on those for which the National Science Foundation collects funding data [1] and identifies their principal agency supporters. Refer to Table 6 and Chart C for funding details. For a more technical and detailed discussion of the fields of behavioral and social science, see the relevant sections of *Behavioral and Social Sciences Research: A National Resource* and the *International Encyclopedia of the Social Sciences.*[2] A detailed discussion of Federal agency programs appears in Chapter V of this study.

A. Anthropology

The science of anthropology aims to explain human physical and cultural variation at different times and in different locales. This field of study grew out of methods of natural history and emphasizes field work and understanding of the interaction between humans and their environment. Physical anthropologists ". . . trace the evolution of the human species through the recovery and interpretation of fossil remains." Cultural anthropologists study patterns of human living and community structures. Cross-cultural comparisons enable anthropologists to study how cultures and soci-

[1] NSF divides the fields of psychological and social sciences as follows:

Psychology deals with behavior, mental processes, and individual and group characteristics and abilities. Psychology is divided into three categories: biological aspects, social aspects, and psychological sciences not elsewhere classified. Examples of disciplines under each of these fields are as follows: Biological aspects: experimental psychology, animal behavior, clinical psychology; comparative psychology, ethology. Social aspects: social psychology, educational, personnel, vocational psychology, and testing, industrial and engineering psychology; development and personality, psychological sciences, n.e.c.

Social sciences are directed toward an understanding of the behavior of social institutions and groups and of individuals as members of a group. These sciences include anthropology, economics, political science, sociology, and social sciences not elsewhere classified. Examples of disciplines under each of these fields are as follows: Anthropology: archaeology; cultural; social and ethnology; applied anthropology. Economics: econometrics and economic statistics; history of economic thought; international economics; industrial, labor, and agricultural economics, macroeconomics; microeconomics; public finance and fiscal policy; theory, economic systems and development. Political science: area or regional studies; comparative government; history of political ideas; international relations and law; national political and legal systems; political theory; public administration. Sociology: comparative and historical; complex organizations; culture and social structure; demography; group interactions, social problems and social welfare; sociological theory. Social sciences, n.e.c.: linguistics; research in education; research in history; socioeconomic geography; research in law, e.g., attempts to assess the impact on society of legal systems and practices.

Not elsewhere classified: Includes multidisciplinary projects within a broad field and single-discipline projects for which a separate field has not been assigned.

Source: National Science Foundation, Federal Funds for Research and Development Fiscal Years 1982–84. Washington, U.S. Govt. Print. Off., 1983. p. 3–4. (NSF 83-319)

[2] Chapter 2. "The Nature and Methods of the Behavioral and Social Sciences." In: McAdams, Robert, et al. Behavioral and Social Sciences Research: A National Resource: Part I. Washington, D.C., National Academy of Sciences Press, 1982. p. 8–32. International Encyclopedia of the Social Sciences. David L. Sills, ed. New York, Macmillan, c. 1979. 18 volumes.

eties compare and differ with respect to, for instance, organization of labor; food gathering; distribution of goods; values; and behaviors, such as marriage and the meaning of family.[3] Anthropologists have shown that "cultural factors" govern much of human behavior. These traditional factors may not be understood by people from different cultures. Anthropologists seek to correct cultural bias and promote international understanding by helping non-natives "see" through natives' eyes. This is illustrated by *The Chrysanthemum and the Sword: Patterns of Japanese Culture*, a book intended to help Westerners grasp the "worldview" of the Japanese and widely credited with affecting U.S. occupation policy in the period 1945–1952.[4] Other applications of anthropology are found in such areas as resettlement programs, foreign service training, public health programs, and forensic identification.

Since 1962, federally funded anthropology research has received only limited Federal funding, generally from 3 to 6 percent of the Federal obligations for social research. In fiscal year 1985 it is estimated that about $21 million will be obligated for federally supported anthropology research. The Smithsonian and the National Science Foundation are the largest agency supporters.

The National Science Foundation reported, in 1981, that it provided 95 percent of the Federal Government's support for basic anthropological research in universities and colleges in the fiscal year 1980. The National Institutes of Health funded a small amount of physical anthropology research. The Smithsonian and the National Park Service fund targeted (that is, applied) anthropological research. In 1981, the National Institute of Mental Health funded almost five percent of federally supported anthropology, primarily for research in social/cultural anthropology. "Under current OMB restrictions," according to NSF, "NIMH will no longer be able to support significant research in this area." In 1980, Annual non-Federal support for anthropological research," according to NSF, was ". . . about $1.5 million . . . from five organizations." The bulk is from the National Geographic Society.[5]

B. Linguistics

Linguistics is the scientific study of human language. This field is divided as follows. The study of syntax focuses on how "a language organizes meaningful elements into meaningful groups according to strictly defined patterns."[6] Semantics focuses on how messages are encoded and interpreted from the patterns. Phonetics studies the physical or vocal transmission of messages. Biological, psychological, social, and cultural factors also affect language and are studied by linguists.

The National Science Foundation created a linguistics support program in 1966. It funds about half of federally supported research in this field. Other Federal agencies, which fund the re-

[3] National Science Board. Discussion Issues, 1981. Social and Behavioral Sciences, vol. 1, Issues and Analysis. June 1981 (NSB 81-253.) Tab D, p. 1.
[4] Benedict, Ruth. The Chrysanthemum and the Sword: Patterns of Japanese Culture. Boston, Houghton Mifflin, 1946. 324 p.
[5] Discussion Issues, 1981, p. 4.
[6] Ibid., p. 10.

maining 50 percent of federally supported linguistics research, focus on particular problems or projects targeted to serve their missions. As of 1981,

> The National Endowment for the Humanities supports the preparation of dictionaries of undescribed languages, which is also an area supported by NSF. NSF and NEH have shared in the support of some dictionary projects. The National Institute of Child Health and Human Development . . . supports some research in language acquisition. Similarly, the National Institute of Neurological and Communicative Disorders and Stroke supports some research in neurolinguistics and in laboratory phonetics as part of its major mission. The Department of Defense funds some research in computational linguistics, and previously supported several projects in speech recognition. . . . The National Institute of Education has an interest in the support of studies relating to reading.[7]

Support for linguistics is not reported as a separate field of science in NSF data reports.

There is little non-Federal support for research in linguistics. According to the National Science Foundation, the Sloan Foundation, "through its 'Particular Program' in Cognitive Science," has supported some work, but it is oriented to interdisciplinary basic research.[8]

The study of linguistics has major implications for machine translation and computational interaction from codes to cyphers.

C. Economics

The study of economics focuses on decisionmaking relating to the allocation of scarce resources, especially in relation to the production of various commodities and their distribution and consumption in society.[9] There are two levels of analysis in economics. Microeconomics looks at assumptions, behaviors, and preferences of economic agents in relation to supply and demand of commodities. Macroeconomics

> . . . concerns the study of entire economies and involves aggregating or averaging individual units into some kind of total level of a society's employment, investment, national income, and so on. Macroeconomics studies the regularities in the movement and relations among these aggregated totals.[10]

The focus of current fundamental work in economics is on: decisionmaking under uncertainty and the resulting behavior of the economic system; the formation of expectations regarding future states of the economy and their impact on public policy interventions; and the tool-building activities in the mathematical formula-

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[7] Ibid., p. 13.
[8] Ibid., p. 13.
[9] See McAdams, Robert, et al. eds. Behavioral and Social Science Research: A National Resource. Washington, D.C., National Academy of Sciences, vol. 1, 1982. p. 13.
[10] Ibid., p. 14.

tion of economic theory and the analysis of economic data."[11] According to the NSF, the study of economic choice under uncertainty promises to yield information with major implications for the way businesses operate and for decentralizing governmental decisionmaking.[12] There are growing links between research in psychology and in economics in an attempt to better understand economic decisionmaking.

Economics has consistently been the single largest recipient of Federal funds for all social science discipline fields. (The category social sciences, NEC receives more, but this represents interdisciplinary work and other single-discipline projects for which a separate field has not been assigned.) In the fiscal year 1985, economics was estimated to have been obligated about 33 percent of all Federal social science research funds and 20 percent of all funds for psychological and social research. See table 6. The Department of Agriculture has been the single largest agency supporter of economics research each year.

The National Science Foundation, however, plays an important role in economics research. In 1981 the National Science Foundation supported about 70 percent all Federal funding for basic economics in universities and colleges,[13] which it typically has done for many years.

D. Geography and Regional Science

Geographers describe, analyze, and explain the locations of the human and physical features of the earth. Research focuses on why locational decisions are made and the consequences for the socioeconomic activities and the interactions and interconnections among places and regions. This work is interdisciplinary since it studies the decisions of people, firms, and institutions and the geographic organization of society, land use, and economic activity. Principal topics of current research include: migration and regional population change; locational decisionmaking by households and industrialists; cause and consequences of regional growth and decline; differences in resource use and geographical aspects of the physical environment; methods for geographic analysis; and the development and use of geographic information systems. Practical problems studied include patterns of energy consumption, housing turnover, and the geographical/epidemiological basis of disease. Applications of this discipline are important also in military and foreign policy and in earth sciences. The NSF plays a dominant role in geography funding by supporting over 90 percent of the basic research in the discipline.[14]

E. Sociology

Sociology studies the relationships among people—in families, groups, organizations, and societies—and how these systems are developed, maintained, or changed. Demographers study the implica-

[11] Larsen, Otto. Social and Economic Science, National Science Foundation, undated, p. 1.
[12] Ibid., p. 2.
[13] NSB, Discussion Issues, op. cit., p. 36.
[14] NSB, Ibid., p. 44, and NSF informal communication.

tions of changing birthrates and population distribution patterns for education, employment, housing, and social security. In many respects the agenda of sociology reflects society's values and problems. Sociologists often deal with a series of complex organizational factors and kinds of relationships which require use of statistical techniques, bodies of longitudinal data, and complex models of social and economic systems.

Annual Federal support for sociology in the early 1970s totaled, on the average, two to three times more than annual support levels in the 1960s. This was due probably to support for applied social problem research. Support levels started to decrease in the mid 1970s. In 1974, Federal funding totaled $102 million. Funding decreased about $40 million to $64 million in 1975 and has fluctuated about $10 million up or down from that figure since then. See table 6.

The single largest supporters of sociology in the government are the Department of Health and Human Services (primarily for work in ADAMHA, and basic social program oriented work) and the National Science Foundation.

F. Measurement Methods and Data Bases

The early reluctance of policymakers to support social and psychological sciences in the National Science Foundation, because of the potential for controversy, was mitigated, in part, by the early and continuing emphasis NSF placed on the support of quantifiable or quantitative social and behavioral research studies. (See Chapter II in this study.) One result is the development of substantial and pivotal NSF programs to support the creation of data bases and methodologies to enhance quantitative procedures and statistical analysis of these data.[15] According to Otto Larsen, a senior advisor on social and behavioral sciences at the National Science Foundation:

> The instruments used by social and behavioral scientists are of the following principal types: science data bases; computing resources; and laboratory equipment. The expenses incurred in doing field research, which are essential to some disciplines, are the equivalent of instrumentation expenditures in other sciences. The most important social science counterparts to the instruments used to measure physical phenomena are the scientific data bases. Of these, the most expensive, and the most valuable, are longitudinal data bases in which observations are made with the same survey instruments at a number of points in time.
>
> The social and behavioral sciences are especially intensive users of computing facilities. At one major American university, for example, social scientists use about 35 percent of the total research computing capacity. . . .
>
> Computer use . . . involves the analysis of large scale data bases; statistical procedures (including, for example,

[15] Support for quantitative procedures and statistical analyses includes research on such methods as causal modeling regression test theory and multi-dimensional scaling.

the estimation of statistical models which can involve extensive iterative processes); on-line control of experimental research; bibliographic uses of the computer in such areas as literature searches; and text processing.[16]

The NSF began to support large scale databases in the mid-1960s and has provided the bulk of Federal support for research to develop large-scale databases and statistical research methodology. NSF estimates that by 1973, 50 percent of all graudate students in political science were receiving their training in quantitative methods through the Inter-University Consortium for Political and Social Research, a statistical data analysis center funded by NSF. In addition, NSF reports that "by 1976, a fair proportion of the methodological articles in the best social and behavioral science journals were authored by young Ph.Ds who began their research under the aegis of the Mathematical Social Science Board, an adjunct project of national scope supported by NSF beginning in 1964." [17]

There is no readily available information which describes how much support Federal agencies have given to the development of methodology and the support of data bases, since the National Science Foundation does not collect statistics in these categories. There is no doubt however, that the U.S. Government's vast statistical framework is a vital part of the information base used by American behavioral and social scientists. Elements of the U.S. Government maintain databases for their own administrative and programmatic needs, but these are also used by behavioral and social scientists in research. These include certain files of Internal Revenue Service data, Department of Commerce census data, Bureau of Labor Statistics data and National Center for Health Statistics data, among others.

The NSF estimated, in 1983, that it supported 56 research projects resulting in the generation or accumulation of data that could be used by more than one researcher. Funding comprised 14 percent of the social and economics research budget, or $2.7 million. NSF has supported several major data bases called "national facilities," because the original researcher as well as subsequent researchers have access to the data for reanalysis and because the database contains nationally representative samples. They and their institutional loci are:

Panel Study of Family Income Dynamics (Institute for Social Research, University of Michigan),

National Election Studies (Center for Political Studies, University of Michigan),

National Time Allocation Data Series (Institute for Social Research, University of Michigan),

Program of Research to Improve the Government-Generated Social Science Data Base (American Statistical Association),

General Social Survey (National Opinion Research Center),

Industrial Change and Occupational Mobility, International Data Archives (Social Science Research Council),

[16] Larsen, Social and Economic Science, op. cit., p. 9–10.
[17] NSB, Discussion Issues, op. cit., p. 63–64.

Data Archives of the Inter-University Consortium for Political and Social Research (Institute for Social Research, University of Michigan),

U.S. Quality of Life Survey Series (Survey Research Center, University of Michigan),

Computer Research Center for Economic and Management Science (Massachusetts Institute of Technology),

1940/50 Censuses Public Use Sample Files (Center for Demography and Ecology, University of Wisconsin),

Center for Coordination and Research on Social Indicators (Social Science Research Council), now terminated, and

U.S. Manufacturing Establishments Data Base (Department of Economics, Yale University).[18]

G. Political Science

Political science focuses on the "creation, organization, and use of . . . power." [19] In the last twenty years, this field has been influenced largely by the behavioral revolution, in that the focus of attention has expanded beyond the study of legal statements, formal rules, institutions, and the structural/functional approach to include assessment of processes of human interaction and decisions. Federally supported basic political science also encompasses study of international relations, cross-national comparisons of political attitudes and institutions, and domestic politics. The National Science Foundation has, for instance, supported the biennial National Election Studies which, since 1952, have generated data bases on citizen attitudes and voting behavior. These, according to NSF, have documented four major changes in the U.S. electorate: (1) A steady decrease in voter turnout; (2) a marked decrease in citizen attachment to political parties; (3) a decline in trust in governmental institutions; and (4) a significant decrease in the competition of Congressional elections." [20]

The field of political science has been among the smallest recipients of Federal funds, never receiving more than about $14 million annually, and more often receiving about $6 to $11 million, usually less than 3 percent of Federal funds awarded for behavioral and social sciences research. NSF has been the largest Federal supporter of fundamental research in this discipline, and, it reports, have provided the bulk of Federal support to universities for basic research support in political science. The NSF appears to be the single largest clearly identifiable supporter of political science research. Other major supporters over time have been the Department of Defense and ADAMHA.[21]

H. Psychology

Psychology studies the whole range of human behavior: ". . . how behavior patterns are acquired, how they are maintained over

[18] Larsen, Social and Economic Science, op. cit., p. 12.
[19] Behavioral and Social Science Research: A National Resource, vol. 1, 1982. op. cit. p. 15.
[20] NSB, Discussion Issues, op. cit., p. 72.
[21] U.S. National Science Foundation. Federal Funds for Research and Development: Federal Obligations by Agency and Detailed Field of Science: Fiscal Years 1967-1985, Washington, U.S. Gov't. Print. Off.

time, how they are modified, how they are suppressed, abandoned, or forgotten, and how particular responses that are parts of these patterns occur under particular circumstances." [22] Major research subtopics include perception, motivation, memory, cognition, learning, education, clinical research, industrial and engineering psychology, and pharmacology, personality, emotion and motor skills.

In the early 1960s, Federal support for the psychological sciences constituted annually over 40 percent, and sometimes approached 50 percent of Federal expenditures for the support of behavioral and social sciences combined. After expenditures for social programs and related social sciences research began to increase, the proportion of the total that went to psychology dropped to an average of somewhere between 30 and 40 percent in the 1970s. There is some indication that the proportion of funding going to the psychological sciences has increased in the last few years—to 39 percent in 1985. In current dollars, the Reagan administration did not cut funding for the psychological sciences as it did for social sciences. However, support for psychological sciences used to be about evenly divided between basic and applied, but now is moving more toward applied.

The Department of Health and Human Services (DHHS) is the largest agency supporter of psychological sciences research, about evenly divided between support for basic and applied psychological sciences. The next largest single agency supporter is the Defense Department (DOD), where the bulk of psychological sciences research support funding (60 to 70 percent) goes to the support of applied research programs. DHHS's psychological sciences programs are intended to advance understanding in the mission areas of disease prevention and control and the behavioral aspects of development and social interaction. DOD's programs are intended to support primarily personnel, training, and related activities.

The National Science Foundation's programs support memory and cognitive processes: learning, thought, memory retention, concept formation, imagination, reading, problem-solving, decision making and intelligence. These research programs also are relevant to the improvement of computer usage and artificial intelligence. According to NSF, the NSF funds about one-fourth of Federal support for basic research in human cognition in colleges and universities. The other agencies, which fund about 75 percent of federally funded research on this topic, are the National Institute of Mental Health, the National Institutes of Health, the Office of Naval Research, and the National Institute of Education. Their research is mission-oriented, while NSF's is more basic research oriented. According to NSF, "the chief non-Federal supporter of cognitive science . . . is the Sloan Foundation; its support is to institutions to help them develop a group of researchers with interdisciplinary training. Support of specific research projects is specifically excluded. A number of larger industrial organizations, including AT&T, Bell Laboratories; IBM, through the IBM Watson Laboratories; and Xerox, through Xerox-Palo Alto Research Center, support intramural research in human cognition." [23]

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[22] Behavioral and Social Sciences Research: A National Resource, vol. 1, 1982, op. cit., p. 9.
[23] NSB, Discussion Issues, op. cit., p. 19.

1. PSYCHOBIOLOGY

Psychobiology research is interdisciplinary to the extent that it focuses on "some aspect of behavior and its environmental, developmental, hormonal, and/or motivational determinants." [24] A sample list of topics includes "Migration and homing, the social and communicative behavior of animals, feeding and reproductive behaviors, animal preferences and aversions, learning and memory, conditioning, and stimulus control." [25]

NSF's support program is the largest of any governmental or nongovernmental agency according to the National Science Board. Most of the work is conducted in academic institutions and other nonprofit institutions, such as zoos, research institutes, and museums.[26]

2. SOCIAL AND DEVELOPMENTAL PSYCHOLOGY

Research in social psychology is intended to describe systematic social behavior in humans, including such topics as "helping and aggression . . . leadership and conformity . . . [and] changes in social and emotional behavior occurring over the entire life span." The National Science Foundation, according to the National Science Board, funds about 25 percent of federally supported research in social psychology. This report also noted that there are virtually no non-Federal sources of support for this discipline.

About 10 percent of federally funded research in developmental psychology comes from NSF. According to the National Science Foundation, about 10 percent of research in developmental psychology is funded by non-Federal sources, including especially the Grant Foundation and the Foundation for Child Development.[27]

I. Social Sciences, Not Elsewhere Classified

The National Science Foundation also uses a reporting category of social sciences not elsewhere classified, which includes interdisciplinary projects and work in fields of social sciences not separately identified.[28] This constitutes the largest reported category of funding for most recent years for the social sciences. It has included much of the inter-disciplinary and problem-oriented research in HHS and in other social mission oriented agencies and the National Science Foundation (especially the now terminated RANN program). The lack of differentiation into categories makes it difficult to draw conclusions about the kind of work which is encompassed in this category.

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[24] Ibid., p. 23.
[25] Ibid.
[26] Ibid., p. 26
[27] Ibid., p. 32.
[28] U.S. National Science Foundation. Federal Funds for Research and Development: Fiscal Years 1983-85, vol. 33. Washington, U.S. Govt. Print. Off., 1985. p. 4.

IV. THE SIMILARITIES AND DIFFERENCES BETWEEN BASIC AND APPLIED RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES

A. Introduction and Overview

This chapter addresses the task force's request for an examination of "the extent to which the distinction between basic and applied research applies to the social and behavioral sciences." This is an extremely complex subject with no easy distinctions, but with implications for Federal funding for research and utilization of research results.

The discussion in this chapter summarizes some of the major literature and thinking on this subject. It deals primarily with the behavioral and social sciences. It should be noted, however, that the dilemma of making explicit and valid distinction between basic and applied research exists in all scientific disciplines.

There is a continuing debate about whether there are meaningful distinctions between basic and applied behavioral and social research.[1] The material in this chapter begins by noting that many behavorial and social scientists say that basic and applied research should not be differentiated as much as they are because researchers use the same methodological techniques to do basic as applied research. For scientists there is no distinction as to what constitutes scientifically acceptable evidence whether one is doing basic or applied research. Indeed, many scientists believe that basic and applied research are not a dichotomy, but are more like end-points on a continuum of research activities. End-points can be distinguished on some criteria such as goals or generality but not others (scientific methods or rigor). An important issue, scientists state, is that of application. Both basic and applied science have applications, and applied science often generates questions that require basic research. Others hold that basic research generally is research done without any immediate application in mind; the researcher's curiosity and her or his conception of the internal criteria of science, that is, scientific needs, determine the purpose and kind of research. Applied research, on the other hand, some say, is intended to serve the purpose of the client that funded it; external criteria—that is societal values and needs and the requirements of the client—play a major role in designing the work and methodology. Some attribute the distinction between basic and applied research to the presumption that applied research is more influenced by social values than is basic research, exacerbated since these "soft sciences" (of behavioral and social research) are more influenced by values than are the "hard" sciences. This view, some argue, is fallacious.

[1] This debate occurs also in other fields of science, such as chemistry, physics, and biology.

While there are compelling arguments in support of the view of the unity of basic and applied behavorial and social research, there are equally compelling, perhaps more persuasive, arguments that basic and applied research in these disciplines are different. This is reflected in the views of some scientists who believe that basic and applied research in these disciplines requires different skills and knowledge bases and has different applications and implications for training and public policy. Some believe that improving utilization of these sciences requires that the status of applied research be raised in the minds of researchers and policymakers. There are also other differences reflected in the way the Government funds such research, reports funding data about it, and develops policy for it.

A related and often overlooked issue is that of identifying federally supported development and dissemination in the social and behavioral sciences and collecting funding information about them, since they are such important and large parts of Federal support for behavioral and social research.

B. Arguments in Support of the Similarity Between Basic and Applied Research

Some behavioral and social scientists believe that differentiating between basic and applied behavioral and social research is unwise and an artificial distinction. For instance, according to the National Research Council's Study Project on Social Research and Development, the categories of basic and applied research which are traditionally used in Government reports on science funding and policy ". . . seem to reflect perception of the physical sciences and technological R&D, and are difficult to make in the behavioral and social sciences.[2] (Thus the project reported funding for the category of research, but also reported funding expenditures under other categories not customarily used to report funding for science. See chapter 5 for more details.) For instance, according to one social scientist, Donald E. Stokes, chairman of the National Academy of Sciences Study Project on Social Research and Development, in 1978:

> A commonplace in every field of science is the sight of a discomfited observer trying to distinguish basic from applied research. Indeed, the sight is so familiar that it should long ago have convinced us that something is wrong, that we are as likely to find a single, clear distinction between basic and applied research as we are to find the philosopher's stone, and that we ought to redefine the terms in which the problem is posed.[3]

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[2] Abramson, Mark A. The Funding of Social Knowledge Production and Application: A Survey of Federal Agencies. Washington, National Academy of Sciences, 1978, pp. 11, 14-15. (Study Project on Social Research and Development, Vol. 2.)

[3] Stokes, Donald E. Making Sense of the Basic/Applied Distinction: Lessons for the Public Policy Programs. Prepared for delivery at the meeting for the Association for Public Policy Analysis and Management. Chicago, Ill., Oct. 10, 1979. Stokes offered the following new conceptualization of types of research: "the difference [between basic and applied research] involves not one distinction but two. Each of the paired concepts of 'basic' and 'applied' is a type in its own right. . . . 'basic' [means] whether the research probes underlying structures or processes

According to Stokes, basic and applied research are not two opposite ends of a spectrum of research, since basic research always has the potential of application, and research done to solve a specific problem always has the potential of moving toward understanding of underlying structures, without necessarily losing its problem focus. He gave examples of these two cases. With respect to applying basic research he reported:

> A particularly vivid example is furnished by the discovery by demographers after the Second World War that they could use the models of population replacement developed between the wars to see more deeply into population changes in the less developed countries. (Notestein, 1980.) The case is interesting because the earlier work had almost literally been forgotten. Soon after the First World War, Lotka did the fundamental work modelling the processes by which biological populations reproduce themselves, spelling out the relationships between fertility, morality, growth, and age. But the early use of these models seemed to lead to empirical contradictions, and they fell into disuse before the end of the Second World War. Yet it was seen after the war that the relationships within these models provided the key that allowed demographers to work from limited information on the less developed countries to a far better understanding of their fertility and population growth.
>
> This understanding has allowed our own government, the governments of the third world, and a number of international agencies to recognize and deal with the problem of population growth on a global scale.[4]

As an example of applied research leading to accumulations of fundamental knowledge, he cited:

> An example is furnished by the research on highway safety over several recent decades. As the concern with highway deaths grew, a considerable body of descriptive statistics accumulated on the frequency, severity, and circumstances of traffic accidents. [This was applied work.] But explanatory questions came more and more to the fore as it was seen that the choice of effective ameliorative measures. in this notoriously multi-factor problem area, required a deeper knowledge of cause. This awareness

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of broad explanatory or predictive significance . . . 'applied' [means] whether it is prompted by the desire to solve some problem or meet some societal need . . . .

It will help to visualize this double dichotomy if we map these several types onto the cells of a four-fold table:

	Applied		Not applied	
Basic	Problem solving through basic understanding.	II	Pure understanding	I
Not basic	Problem description, knowledge application.	III	[Research projects undertaken as training or as a form of "distributive politics"].	IV

Types I and III in Stoke's table fit the common idea that basic and applied research are opposite to each other; these cells are basic, not applied and applied, not basic. Type II basic and applied, is more closely related to mission-oriented basic research (idem.)"

[4] Ibid. p. 4-5.

> prompted a series of studies of the engineering and behavioral etiology of accident that raised at times such fundamental questions as the reasons for the greater resistance to social control early in the life cycle. But these studies were powerfully motivated by the applied purpose of finding points for effective intervention to counter the trend of mounting highway deaths."[5]

In a 1969 National Academy of Sciences report on *Behavioral and Social Sciences: Outlook and Needs* it was concluded that both basic and applied research may have applications—

> The objectives of behavioral and social scientists are essentially the same as those of other scientists: to establish a body of fact and theory, demonstrable and communicable, that contributes to knowledge and understanding that will permit man to manage his affairs with greater rationality. The individual scholar becomes fascinated with a known area that he is prepared to explore; this becomes an exciting intellectual quest, and his contribution moves the body of knowledge ahead, thus serving the purposes of education and the broadening of understanding, whether or not there is any immediate application to human affairs. Others, however, do their investigating in the turmoil of life as it is lived, in the hope that they may develop insights that can be used promptly. These distinctions between basic and applied social science are seldom sharp, and important scientific contributions can be made all along the line, with applied findings serving basic science just as basic science serves applications.[6]

"What is frequently, if misleadingly, called 'applied social science'", according to Prewitt, "is but a small part of the application of social science."[7]

Some work intended to be applied ". . . can be highly fundamental in character in that it has an important impact on the conceptual structure or outlook of a field." In testimony on this point before the House Committee on Science and Technology, former NSF Director John B. Slaughter cited several examples of applied behavioral and social science research which "led to major contributions in basic knowledge." He cited aptitude testing, the development of opinion and moral work in World War II, which led to *The American Soldier,* a methodologically sophisticated study, and the Western Electric studies, which led to definition of the Hawthorne effect.[8]

The implication of this view, for funding, is that "research on basic problems can be solved only by enlarging our basic under-

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[5] Ibid., p. 5–6.
[6] The Behavioral and Social Sciences: Outlook and Needs. A Report by the Behavioral and Social Sciences Survey Committee under the auspices of The Committee on Science and Public Policy, National Academy of Sciences, and the Committee on Problems and Policy, Social Science Research Council. Washington, D.C., National Academy of Sciences, 1969. p. 20.
[7] Prewitt, Social Science Research Council. Annual Report, 1979–1980, op. cit. p. xx.
[8] Testimony of John B. Slaugher before the House Committee on Science and Technology, Mar. 21, 1981. p. 4, typescript.

standing [which] seems to be where our comparative advantage lies."[9]

Scientists have also suggested several other categories in addition to basic and applied research. One is the concept of "mission oriented basic research." For instance, Kenneth Prewitt, as President of the Social Science Research Council, defined this as "research in which practial concerns guide the choice of research topics, but which is conducted in ways which have no immediate or directly foreseeable applications."[10]

> The general field in which a scientist chooses or is assigned to work may be influenced by possible or probable applicability, even though the detailed choices of direction may be governed wholly by internal scientific criteria. Research of this type is sometimes referred to as "oriented basic research." Much biomedical research is of this character. . . .[11]

C. The Impact of Values on Basic and Applied Research

Some believe that the behavioral and social sciences are inherently applied and value-laden to begin with because their subject is human behavior and the problems humans confront in dealing with each other and with their environment. For instance, often it is acknowledged that social history, and thus societal values, have influenced the shape of basic research priorities, "schools of thought," and approaches to the study of the behavioral and social sciences. This is exemplified in an analysis by James Coleman, about the rise and decline of the "Chicago school" of sociology under Robert Park, and its replacement as a dominant intellectual force by Paul Lazarsfeld and the Columbia School. The former concentrated research efforts on immigration, urban life, and the assimilation of outsiders—or the "marginal man"—into urban society. As large waves of early twentieth century immigration ceased, and the issue of national methods of communication and the influence of the dissemination of the national media came to be an important social force, the Columbia school of sociology, which studied these new issues, became a dominant intellectual force in sociology. Subsequent social pressures helped to define the shape and objects of social research and led to new "schools of social research," reflecting new social trends. These included the post World War II claims of blacks and other disenfranchised groups to full participation in society, the "Great Society Legislation" (with the Civil Rights Act of 1964, the Elementary and Secondary Education Act of 1965, the creation of the Office of Economic Opportunity, the Headstart program, and Medicare). In the 1970s, such factors included the spurt of safety and environmental regulation, with attendant calls for social impact assessment, which resulted in the development of a "school" of social policy research to do Gov-

[9] Ibid., p. 8–9.
[10] Social Science Research Council. Annual Report, 1979–1980, New York, Social Science Research Council. p. xix.
[11] Brooks, Harvey. Applied Research: Definitions, Concepts, Themes. *In* Applied Science and Technological Progress. A Report to the Committee on Science and Astronautics. U.S. House of Representatives, by the National Academy of Sciences, 1967. p. 23.

ernment work on social experimentation, program evaluation, planned variations, and national longitudinal studies.[12]

However, the argument can also be made that the influence of values is not limited to the social and behavioral sciences but that values also influence the priorities and methods of the natural and physical sciences. Societal events or pressures appear, for instance, to have influenced such research priorities in the natural and physical sciences as cancer, AIDS, nuclear weapons production, and laser-based space defensive weapons.

Thomas Kuhn, a leading philosopher of science, has been quoted as saying that societal values and historical events influence the early stages of development of all fields of science:

> . . . social needs and values are a major determinant of the problems on which its practitioners concentrate. Also during this period the concepts they deploy in solving problems are extensively conditioned by contemporary common sense, by a prevailing philosophical tradition, or by the most prestigious contemporary sciences.[13]

Internal criteria (of science), rather than external criteria (that is, societal values), become more important determinants of research priorities, according to Kuhn, after a science has become mature:

> Practitioners of a mature science are people, Kuhn continues . . . trained in a sophisticated body of traditional theory and of instrumental, mathematical, and verbal technique. As a result, they constitute a special subculture, one whose members are the exclusive audience for, and judges of, each other's work. The problems on which such specialists work are no longer presented by the external society but by an internal challenge to increase the scope and precision of the fit between existing theory and nature. And the concepts used to resolve these problems are normally close relatives of those supplied by prior training for the specialty. In short, compared with other professional and creative pursuits, the practitioners of mature science are effectively insulated from the cultural milieu in which they live their extra-professional lives (118–119).[14]

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[12] According to Coleman "it is interesting that researchers and research organizations who grew up in one research tradition are often unable to accommodate to the new patterns of research, despite attempts. For example . . . the Chicago school attempted to carry the ideas of symbolic interactionism into the new setting. But there was little interest in this work, because it was done in the old mode, with indifferen[ce] to its use in actions of interested parties. Similarly, many sociologists who began their careers in the 1950s with researcher-initiated projects funded by grants or with small market research or mass communications projects have been unable to accommodate to the new structure of policy research with tighter controls in an organizational context. At Columbia, the Bureau of Applied Social Research, organized . . . [to conduct research on communications] of the Columbia school era, was unable to make the transition to policy research and finally closed shop." (Coleman, James. S. The Structure of Society and the Nature of Social Research. Knowledge, Creation, Diffusion, Utilization, v. 1, Mar. 1980: 333–350, especially p. 349.)

[13] Kuhn, Thomas, *The Essential Tension*, as cited Robert McC. Adams. Rationales and Strategies for Social Science Research. American Academy of Arts and Sciences, Stated Meeting, 10 Dec. 1980, Reading Copy. *In* National Science Board. Discussion Issues, 1981. Social and Behavioral Sciences, v. 1, Issues and Analysis. June 1981, Tab B. p. 10–11, NSB–81–253.

[14] McC. Adams, NBS. In Discussion Issues, 1981, op. cit., quoting Kuhn, op. cit.

This statement obviously implies that the more mature the science, the less the influence of societal values upon it, and the more it is oriented to asking fundamental questions, or basic research. Obviously not everyone agrees with this view. However, Kuhn's notion does lead to the possible implication that the behavioral and social sciences, as newer sciences than the natural and physcial sciences, may be more influenced by societal values. At the same time, it cannot be denied that all sciences—natural, physical, behavioral, and social—are influenced by societal values, (and, therefore, by claims of potential application) regardless of their maturity, to the extent that tests of significance, used in all sciences, depend on values and judgments about the degree of acceptable costs and risks the scientist and society are willing to accept. As Ravetz put it: "A scientific problem is . . . incapable of having a solution which is 'true.' Rather, the solution will be assessed for adequacy . . ." and adequacy depends on judgments made by the scientist, based on the values society places on factors used in judging whether to accept or reject scientific facts as true or false.[15] Values also influence all sciences to the extent that choices for funding research projects depend upon "peer reviews" made by other scientists—judgments that are based on the individual reviewer's values.

D. Arguments in Support of the Notion That Applied Research Should Be Differentiated From Basic Research

Although there are compelling arguments in favor of not differentiating clearly between basic and applied research in the behavioral and social sciences, there are equally compelling, if not more persuasive, views that basic research can be distinguished from applied research. Harvey Brooks, a scholar of science policy, remarked, for instance, that the extent to which a researcher relies on internal or external criteria are determinants of whether behavioral and social research is basic or applied:

> Research is best regarded as a continuing process involving a series of contingent choices by the researcher. Each time he decides between alternative courses of action, the

[15] In greater detail, Ravetz explained: "Each component of the argument of a solved problem, either an inference-link or a piece of evidence, can be no more than adequate to its function in the total structure, and what is 'adequate' will depend not merely on its context in the problem, but on the general criteria of adequacy for the class of such problems imposed by the community. . . . [A]n example of the necessity of judgments of adequacy [is] in the discussions of the 'soundness' of data, and of the 'reliability' and 'relevance' of information. An appreciation of what is involved in such judgments may be gained from a consideration of a common and routine procedure in the formation of such judgments: a statistical significance test. For statistics do not simply say that a correlation is 'significant' or 'not significant;' rather, they will speak of significance at a certain level. Those who have any craft skill in the use of such tools will appreciate that the significance level to be adopted is not assigned by God, but must be decided by the user. The decision will be based on estimates of the direct costs and the risks associated with each level. For each level of significance involves the possibility of two sorts of error: of rejecting worthwhile information, or of allowing dubious information to pass. The more stringent the test chosen, the safer; but also the more costly, because of the extra time, care, the resources required for producing material that will pass it. The choice of a particular level of significance must depend on a judgment of what degree of safety is required, for that component in its context in the total problem. And this judgment must be based on general criteria of adequacy applied to that particular situation. There can be no perfectly safe test of the quality of the material, and neither can there be a certainly correct decision on the degree of stringency of the test. (Ravetz, Jerome R. Scientific Knowledge and Its Social Problems. New York, Oxford University Press, 1971, p. 152-153.)

> factors that influence his choice determine the degree to which the research is basic or applied. If each choice is influenced almost entirely by the conceptual structure of the subject rather than by the ultimate utility of the results, then the research is generally said to be basic or fundamental, even though the general subject may relate to possible applications and may be funded with this in mind. The fact that research is basic does not mean that the results lack utility, but only that utility is not the primary factor in the choice of direction for each successive step.[16]

Robert K. Merton, a sociologist of science, also differentiated between basic and applied on the basis of whether knowledge was produced. "Basic research," he wrote, "discovers uniformities in nature and society and provides new understandings of previously identified uniformities. This conception departs from a prevailing tendency to define basic research in terms of the purposes of the investigators." [17] He distinguished basic research from applied by saying that applied ". . . makes use of existing knowledge, fundamental or empirical," but the new knowledge generated by basic research "adds to general understanding or uniformities that go beyond any particular class of applications. . . ." [18]

He also urged that organizations which use applied social research also start to fund more basic social research. And he gave as an example of a useful prototype, an Office of Social Research, under the direction of the sociologist, John W. Riley, Jr., established by the Equitable Life Assurance Society in the 1960s.[19]

Compelling arguments have been made to maintain a clearcut differentiation between basic and applied behavioral and social research, with respect to funding and expectations of research output, in order to protect the future of these kinds of research. It is obvious, as Brooks said, that ". . . science, to be effective . . . needs both isolation and communication." [20] The researcher continuously having to change direction in research to serve an application may end up being unproductive, yet the user needs to be able to obtain information from the scientist. And Merton pointed out clearly that the conduct and funding of basic research should be protected:

> To restrict sociology to research squarely aimed at urgent social problems will result in ideas and information less useful for members of the helping professions or shapers of public policy. Academic sociologists—sheltered as well as circumscribed by their ivory tower—might offer fresh conceptualizations by locating a specific case in a general pattern, and so suggest new strategies for help." [21]

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[16] Brooks, Harvey. Applied Research: Definitions, Concepts, Themes. op. cit., p. 23.
[17] Merton, Robert. K. Basic Research and Potentials of Relevance. In Merton, Robert K. Social Research and the Practicing Professions. Edited and with an Introduction by Aaron Rosenblatt and Thomas F. Gieryn. Cambridge, Abt Books, 1982. p. 214.
[18] Ibid., p. 251.
[19] Ibid., p. 222.
[20] Brooks, Applied Research, p. 25.
[21] Merton, Social Research and the Practicing Professions, op. cit., p. xii.

Brooks enunicated this argument cogently: "Some classification of research into basic and applied is probably needed to protect some kinds of research activity from unrealizable expectations." [22]

There is also the view that applied research is different and unique from basic research and needs to be diffentiated from basic research in order to be nurtured and shaped into directions useful for society. Several different social researchers have written on this point.[23] One recent, authoritative view was given by Howard E. Freeman, a researcher at UCLA, and Peter H. Rossi, a researcher at the University of Massachusetts, and a past president of the American Sociological Association. They noted the academic disdain for doing applied social research, an attitude, which, they said, should be overcome to "mitigate the shrinking opportunities for sociologists in the academic labor market." Additional research support would flow to these fields if sociologist's work was more relevant to solving social problems. ". . . [H]owever, there are qualitative differences between applied and conventional academic work that need to be confronted, including the educational preparation required, the criteria for student selection, the ways faculty are evaluated, and the kinds of work that are valued." [24]

E. Public Policy Factors Which Support a Distinction Between Basic and Applied Behavioral and Social Research

Although there may be objections, it can be postulated that there are several public policy factors which call for a clear differentiation between basic and applied social and behavioral science research. One important factor is the requirement Federal agencies have to provide information on research funding to the National Science Foundation to enable it to fulfill sec. 3(a) (7) of its enabling legislation, which requires NSF to report annually to the President on various types of expenditures for scientific research.

Related to this, many scientists perceive applied research as somehow less important, valuable, scientific, or objective than basic research. In the social sciences this perception may derive from the fact that when the National Science Foundation was first created, it was not given an explicit mandate, but rather a permissive mandate, to support the behavioral and social sciences. Gradually basic, quantitative, behavioral and social science research, and some applied research, came to be accepted as a proper and legitimate fields of study, but the legacy and some of the perceptions of social science as being nonscientific linger.

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[22] Brooks, Applied Research: Definitions, Concepts, Themes. op. cit., p. 25–26.

[23] Nathan, Richard P. The Missing Link in Applied Social Science. Society, Jan./Feb. 1985: 71–77. See also Komarovsky, Mirra, ed. Sociology and Public Policy. The Case of Presidential Commissions. New York, Elsevier. p. 5–6, who concluded, based on her review of the role of social scientists in presidential commissions: "the body of basic science is not likely to address itself to the questions that an applied scientist is called upon to answer, certainly not in a specific enough manner. Even when an inference from the existing knowledge appears to provide the sociological consultant with a ready guide to policy, this insight will probably require empirical validation in the concrete context of the problem in question . . . . Formulation of policies to cope with social problems will generally require some new research addressed specifically to the question at issue. The sociological perspective and existing sociological generalizations will inform the design of this applied research."

[24] Freeman, Howard E. and Peter H. Rossi. Furthering the Applied Side of Sociology. American Sociological Review, v. 49, Aug. 1984: 571.

In 1968 the NSF enabling legislation was revised to make clear NSF's responsibilities to support applied, as well as basic, research, and social science, as well as other disciplines. (P.L. 90-407.) Until 1981, applied research was supported in a separate NSF division. Pursuant to a 1981 reorganization, the functions of the applied research directorate were located in the relevant research directorates but policies of balancing basic and applied research and of tracking their funding were maintained. (National Science Foundation Bulletin No. 81-83. Oct. 16, 1981. Subject: Tracking of Applied Research Support.)

In order to provide data essential for describing Federal support for science, the National Science Foundation, in its series *Federal Funds for Science* and its successor, *Federal Funds for Research and Development*, use the categories of basic research, "applied research," and "development." [25] The validity of this "trichotomy" has been criticized as "uncertain." [26] Nevertheless, the conceptualization appears to have proven valid and internally consistent to policymakers in the thirty-five years during which it has been used.

As is indicated in table 2 and chart A, about two-thirds of Federal funds for research in the behavioral and social sciences have always gone to support applied research. This ratio of applied to basic increased considerably in the mid- to late 1970s, when the percentage increased to about 75 percent going for applied work in these fields. This trend probably reflects increased expenditures for work in connection with fine-tuning of social welfare and related programs. The ratio has been about 2 (applied) to 1 (basic) for the behavioral sciences and 3 to 1 for the social sciences.

Most of the behavioral and social research supported by the Government is applied research (oriented to mission needs); and that which is basic, clearly, is supported by agencies whose principal mission is the support of research. Congress uses different kinds of criteria of the "public good"—related to the intrinsically different outcomes expected for basic and applied research—in judging funding objectives in oversight and appropriations hearings for these agencies.

Basic research support programs commonly have attached to them support functions for teaching and student training especially in the National Science Foundation and the National Institutes of Health and ADAMHA agencies. It is not expected that other mission-oriented agencies that support behavioral and social research will support training at the same levels. But, it is expected that Government will support training programs in these disciplines.

It is also clear that university researchers play an important role in performing basic social and psychological sciences research for

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[25] NSF's definitions follow: "In *basic research* the objective of the sponsoring agency is to gain fuller knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications lowered processes or products in mind. *In applied research* the objective of the sponsoring agency is to gain knowledge or understanding necessary for determining the means of which a recognized and specific need may be met." U.S. National Science Foundation. Federal Funds for Research and Development: Fiscal Years 1983, 1984, and 1985. v. 33. Washington, U.S. Govt. Print. Off., 1984. p. 1. NSF uses more detailed definitions when it categorizes its own agency expenditures for research.

[26] Kryskal, William. Taking Data Seriously. *In* Toward a Metric of Science. Edited by Yeluda Elkana, et al. New York, John Wiley and Sons, 1978. p. 151.

the Government. For instance the information in table 7 shows that for the period fiscal year 1974 to 1986, on average 58 percent of all federally funded basic research in psychology was performed in universities and for the same period, 46 percent of all federally funded basic research in social sciences was performed in universities. The percentage of basic social sciences research performed in universities has been declining. For the period 1974 to 1979, universities conducted about 53 percent of all federally funded basic social sciences research; that declined to 40 percent during the period 1980 to 1985.

TABLE 7A.—FEDERALLY FUNDED BASIC BEHAVIORAL AND SOCIAL SCIENCES RESEARCH PERFORMED IN UNIVERSITIES, FISCAL YEARS 1974–86, BY PERCENTAGE [1]

Fiscal year	Percent of Federally Funded Basic Research	
	In social sciences performed in universities	In psychology performed in universities
1974	61	61.2
1975	56	47.6
1976	52	59.2
1977	55	57.1
1978	49	53.2
1979	44	57.1
1980	43	62.2
1981	43	61.8
1982	39	53.2
1983	41	59.8
1984	38	58.5
1985	38	63.3
1986	40	66.1

[1] Figured from data in U.S. National Science Foundation. Federal Funds for Research and Development. Federal Obligations for Research by Agency and Detailed Field of Science: Fiscal Years 1967–1986 and U.S. National Science Foundation. Federal Funds for Research and Development. Federal Obligations for Research to Universities and Colleges by Agency and Detailed Field of Science: Fiscal Years 1973–1986.

Of the agencies which awarded the largest amounts for basic psychology research in 1983, the percentages awarded to universities were as follows: Defense Department, 63 percent; Department of Health and Human Services, 56 percent; and National Science Foundation, 87 percent. Of the agencies which awarded the largest amounts for the conduct of basic social science research in 1983, the percentages that went to universities were as follows: Department of Agriculture, 77 percent; Department of Health and Human Services, 53 percent; National Science Foundation, 77 percent; Smithsonian, nominal (research is performed mostly intramurally).[27]

A compelling argument, then, in support of maintaining a distinction between basic and applied research in the behavioral and social sciences is the need to develop and maintain Federal support policies and programs which provide the kinds of knowledge and personnel needed to advance the science and applications in these

[27] Figured from data in U.S. National Science Foundation. Federal Funds for Research and Development. Federal Obligations for Research by Agency and Detailed Field of Science: Fiscal Years 1967–1986 and U.S. National Science Foundation. Federal Funds for Research and Development. Federal Obligations for Research to Universities and Colleges by Agency and Detailed Field of Science: Fiscal Years 1973–1986. Tables C–19, C–38, and C–86.

fields. Ever since the Federal establishment for supporting science was erected following World War II, there has been a clear-cut Government policy to strengthen and advance U.S. university research capabilities to provide a manpower pool and knowledge base to meet unexpected national needs and to maintain the pluralistic, diversified system of scientific research which provides the foundation for scientific preemience in the United States. Long-range fundamental basic research in the behavioral and social sciences that is performed in universities undoubtedly contributes to the scientific excellence of this Nation.

Some believe that market forces and Federal research funding patterns are driving new researchers in these fields away from basic and toward applied research. (As noted above the bulk of Federal funding for these disciplines is for applied research.) These may have affected enrollment patterns and career choices, and may constrain the size of the pool of basic research scientists in the future.[28] However, such trends may be appropriate responses to the policies that have been instituted in the last few years for these fields of science.

The support of essential basic research that generates fundamental knowledge but that may not have an immediate payoff—for instance, support of NSF's longitudinal data collection and data bases, that allow for replication and sharing of resources—has been determined to be a proper governmental function. A blurring of the distinction between basic and applied research might jeopardize this kind of responsibility and cloud Federal mechanisms and procedures to determine priorities for the support of the sciences. Policy makers' needs for data that describe funding and support programs for basic and applied research seems essential to enable them to design policies to meet goals they seek to achieve for these fields.

The Task Force may wish to consider whether policies and programs should be established to collect statistics on the conduct of "development and related activities" in the behavioral and social sciences. As is pointed out, in chapter V, the National Academy of Sciences reported in 1978, that more Federal expenditures went to this other category than to basic and applied research in the behavioral and social sciences, combined. Expenditures for development, demonstration, evaluation, and some statistics totaled approximately $1.2 billion. Yet the Government does not collect any information on a recurring basis to describe and inventory these activities.

[28] Klatzky, R. L. et al. Experimental Psychologists in Industry. American Psychologist, v. 40, 1985. 1031-1037.

V. TRENDS IN FEDERAL SUPPORT FOR THE BEHAVIORAL AND SOCIAL SCIENCES: A SUMMARY AND SYNOPSIS OF FEDERAL AGENCY PROGRAMS

This chapter begins with a summary of recent major historical trends in funding for behavorial and social science research and then gives short summary description of the purposes and funding of the behavioral and social sciences programs that Federal agencies fund.

A. Major Funding Trends

This section on funding trends opens with an analysis of funding for behavioral and social sciences research, development, and realated activities made by the National Research Council of the National Academy of Sciences in 1978. The section then moves on to look at trends in research funding over time. The major source for this information is NSF data.[1]

1. FEDERAL EXPENDITURES FOR BEHAVIORAL AND SOCIAL RESEARCH AND DEVELOPMENT AND RELATED ACTIVITIES ESTIMATED TO TOTAL $2 BILLION ANNUALLY BY THE NATIONAL RESEARCH COUNCIL

Federal obligations for the support of social and behavioral research and development and related activities according to the National Research Council of the National Academy of Sciences, totaled almost $2 billion in fiscal year 1977, or $1,888.8 million to be precise.[2] This included funding for demonstration, all social and behavioral "knowledge production and application activities", including funds for development and dissemination, categories for which the National Science Foundation does not customarily report data.[3] Although no comparable data are available for other fiscal years, there may have been little change in this total since 1977.[4]

This is a large enterprise, and far greater than the commonly discussed level of funding only for social and behavioral research

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[1] Alternative data describing funding patterns in psychology research, as collected by the American Psychological Association, may be found in: Lowman, Robert P. and Jay Stopp. Research Activities in Psychology, Funding and Human Resources. American Psychologist, v. 36, Nov. 1981: 1364-1394.

[2] Abramson, Mark A. The Funding of Social Knowledge Production and Application: A Survey of Federal Agencies. Washington, National Academy of sciences, 1978, chaps. 1, 2, and 3. (Study Project on Social Research and Development, Assembly of Behavioral and Social Sciences, National Research Council, Vol. 2.)

[3] Behavioral research was subsumed in the definition of social R&D. According to the report: "Social R&D consists of research and development and related activities concerned with understanding and alleviating social problems. It is intended to include such activities as the production or application of knowledge concerning the behavior of individuals, groups, or institutions or the effects of policies, programs or technologies on behavior." (Abramson, op. cit., p. 15.)

[4] There is an actual 20 percent decrease in funding for research between 1977 and 1985, estimated in terms of constant dollars. In terms of current dollars, the increase for the period is 32 percent. But research constituted only about one-third of the total reported for 1977. (See table 4 above.)

found in statistics published by the National Science Foundation. The NSF estimated that in the fiscal year 1977, Federal obligations for behavioral and social research totaled about $582 million. The fiscal year 1985 estimated total for behavioral and social research is about $768 million. The 1985 figure is $328 million, in terms of constant 1972 dollars, a 20 percent decrease in constant dollars since 1977.

Although NSF collects data on development, it does not report funding for development by field of science; therefore, "field of science" data are available only for research.

The National Research Council (NRC) inventory is important because it conveys the full scope and magnitude of federally supported social and behavioral R&D activities in which the Task Force is interested. In many respects it gives a better representation, than do NSF data, of the kinds of Federal R&D support activities which employ social and behavioral scientists or use behavioral and social knowledge. Most of the funding data used in this report are limited to the NSF-generated information which, it can be estimated with some confidence, probably comprise only about 30 to 40 percent of the total amount of Federal funding for social R&D and related activities as conceptualized by the National Research Council.

The NRC study focused on"social knowledge production and application" activities—both behavioral and social. Knowledge production was defined to include four activities, of which only two are included in NSF data, according to the report. Federal funding for knowledge production activities totaled about $1.2 billion in 1977,[5] and encompassed the following activities:[6]

(1) Research, which was defined as basic, applied and policy research, or "systematic, intensive study directed toward greater knowledge or understanding of the subject studied." NSF collects data on this activity. The NRC estimated the funding for 1977 between $600 to $700 million (the actual funding level was $528 million). The largest supporters were the National Science Foundation, the National Institute of Education, the Alcohol, Drug Abuse, and Mental Health Administration, and the National Institutes of Health.

(2) Demonstration for policy formulation, which was conceived to be ". . . a small-scale program undertaken in an operational setting for a finite period of time to test the desirability of a proposed course of action." Social experiments are included. NSF collects data on this field, but does not report it according to field of science. The Academy estimated that in 1977 about $200 million, or almost 10 percent of the total, was expended on this area. Clearly identified major supporters in 1977 were the Office of Education, the National Institute of Education, and the HUD Office of Policy Development and Research.

(3) Program evaluations, which were defined as seeking ". . . to systematically analyze federal programs . . . to determine the extent to which they have achieved their objectives." NSF does not collect data on this activity, except for evaluation re-

[5] Abramson, op. cit., p. 30.
[6] Ibid., p. 15-21.

search, not geared to a management decision. The NRC report estimated that about $64 million, or 3 percent of the total went to this function in 1977.

(4) General purpose statistics, which the Research Council defined as the collection of "either current or periodic data [of social, economic, and demographic topics] with intended and unintended users. NSF does not collect data on funding for statistical activities like this. According to the National Research Council, approximately $314 million, or 17 percent of social R&D funding in 1977 went to this category. The largest supporter in 1977 was the Bureau of the Census.

Knowledge application consists of three activities which, according to the Research Council, totaled $611 million, or 32 percent of the total obligations in 1977. These activities were:

(1) Demonstrations for policy implementation, development of materials, and dissemination. A demonstration for policy implementation was defined as ". . . a small-scale program undertaken in an operational setting for a finite period of time to test the desirability of a proposed course of action." NSF does not collect data on support of this function. About $179 million, or almost 10 percent of the total, went to this activity in 1977.

(2) Development of materials, according to the NRC, consisted of the ". . . systematic use of knowledge and understanding gained from research to produce materials," such as curriculum, testing instruments, and training manuals. NSF statistics include funding for this item, which the Research Council estimated to have cost $115 million, or 6 percent of the total, in 1977.

(3) Dissemination accounted for $318 million, or 17 percent of the total, in 1977. It was defined as consisting ". . . of activities undertaken by research managers . . . to promote the application of knowledge or data resulting from social knowledge production activities." NSF does not collect data on this category. The Extension Service of the Department of Agriculture was the largest supporter in 1977.

The Academy summarized the functions and support levels of the major social knowledge production and application activities in 1977 as follows:

TABLE 7B.—LARGEST AGENCY FUNDERS OF SOCIAL KNOWLEDGE PRODUCTION AND APPLICATION

[In millions of fiscal 1977 dollars] [1]

Agency	Department	Social knowledge production and application obligations	Predominant social knowledge production and application activity
1. Office of Education	HEW	$202.3	Demonstrations.
2. Extension Service	Agriculture	161.0	Dissemination.
3. National Science Foundation	Independent agency	99.9	Research.
4. National Institute of Education	HEW	95.0	Research/demonstrations.
5. Bureau of the Census	Commerce	79.6	Statistics.
6. Alcohol, Drug Abuse, and Mental Health Administration.	HEW	79.5	Research.
7. Office of Policy Development and Research	HUD	68.4	Demonstrations/research.
8. National Institutes of Health	HEW	68.1	Research.
9. Office of Human Development Services	HEW	65.2	Do.

TABLE 7B.—LARGEST AGENCY FUNDERS OF SOCIAL KNOWLEDGE PRODUCTION AND APPLICATION—Continued

[In millions of fiscal 1977 dollars] [1]

Agency	Department	Social knowledge production and application obligations	Predominant social knowledge production and application activity
10. Bureau of Labor Statistics	Labor	62.7	Do.
11. Health Resources Administration	HEW	62.5	Do.
12. Law Enforcement Assistance Administration	Justice	50.9	Do.
13. Health Services Administration	HEW	45.4	Demonstrations.
14. Occupational Safety and Health Administration	Labor	38.3	Do.
15. Urban Mass Transportation Administration	Transportation	36.1	Do.
16. Office of the Assistant Secretary for Planning and Evaluation.	HEW	34.6	Do.
17. Statistical Reporting Service	Agriculture	34.0	Statistics.
18. Economic Research Service	Agriculture	31.9	Research.
19. Social Security Administration	HEW	27.6	Do.
20. National Highway Traffic Safety Administration	Transportation	27.4	Do.
21. Agency for International Development	State	27.2	Do.
22. Cooperative State Research Service	Agriculture	27.2	Do.
23. Department of the Army	Defense	25.1	Do.
24. Energy Research and Development Administration [2]	Independent agency	21.7	Do.
25. Office of the Secretary	Transportation	20.0	Do.

[1] Ibid., p. 35.
[2] Consolidated into the Department of Energy.

This table shows that the mission-oriented operating agencies obligated nearly 50 percent of all support for social knowledge, production and application in 1977. Agencies whose primary mission was research funding (National Science Foundation, National Institutes of Health) funded about only 28 percent of the total in 1977. These trends were summarized as follows:

TABLE 8.—FUNDING PATTERNS OF SOCIAL KNOWLEDGE PRODUCTION AND APPLICATION BY ORGANIZATIONAL LOCATION

[In millions of fiscal 1977 dollars] [1]

Organizational location of social knowledge production and application activity	Social knowledge production and application obligations	
	Amount	Percent
Associated with an operating program	$939.6	49.7
Associated with a policymaking office	184.4	9.7
Associated with an agency whose primary mission is R&D funding	526.5	27.9
Associated with an agency whose primary mission is the collection and/or analysis of statistics	238.3	12.6
Total	1,888.8	99.9

[1] Ibid., p. 37.

The National Research Council also examined the major goal or audience of these support activities. It found, surprisingly, that over 50 percent of the Federal program for the support of knowledge production and application went to produce knowledge for third parties, not for the Federal Government. Third parties included: State and local government officials, school administrators, teachers, social workers, police officers, and so forth. Specifically, ". . . much of the activity of operating agencies (such as the Office

of Education and the Urban Mass Transportation Administration) and some R&D agencies (such as the National Institute of Education and the National Institute of Law Enforcement and Criminal Justice) is aimed at providing information to nonfederal users." [7]

TABLE 9.—FUNDING PATTERNS BY AGENCY GOAL OR AUDIENCE

[In millions of fiscal 1977 dollars] [1]

Agency goal or audience	Social knowledge production and application obligations	
	Amount	Percent
Improvement of Federal programs	$267.4	14.1
Improvement of Federal policies	191.1	10.1
Provision of knowledge for third parties	964.8	51.1
Advancement of knowledge	210.7	11.1
Collection and analysis of statistical data	254.8	13.5
Total	1,888.8	99.9

[1] Ibid., p. 37.

2. TRENDS IN NATIONAL SCIENCE FOUNDATION DATA

a. Decreases in Funding Over Time

National Science Foundation data on Federal funding for research (which are limited to about 40 percent of total funding for behavioral and social research and development and related activities as reported by the National Research Council) show that Federal support for basic and applied behavioral and social science increased as a percentage of total Federal research funding, from about 3.9 percent in 1962 to a high of 8 percent in 1971, and then started to decrease steadily, to about 5 percent estimated in 1985. See Table 10 and Chart D below. The accelerated decrease of about 1 percentage point, beginning in 1982, reflects the cuts instituted by the Reagan Administration.

TABLE 10.—*Behavioral and Social Science Research As a Percent of Total Federal Research Funding* [1]

Fiscal year:	*Percent*
1962	3.9
1963	4.3
1964	5.1
1965	5.4
1966	5.7
1967	6.3
1968	6.0
1969	6.8
1970	6.5
1971	8.0
1972	7.6
1973	7.3
1974	6.9
1975	7.0
1976	6.8
1977	6.8

[7] Ibid., p. 36.

TABLE 10.—*Behavioral and Social Science Research As a Percent of Total Federal Research Funding* [1]—Continued

1978	7.1
1979	6.9
1980	6.2
1981	5.8
1982	4.6
1983	4.7
1984	4.9
1985	4.8
1986	4.6

[1] Calculated from data in various tables in U.S. National Science Foundation. Federal Funds for Research and Development. Detailed Historical Tables: Fiscal Years 1956–1985. Washington, U.S. Govt. Print. Off., 1985.

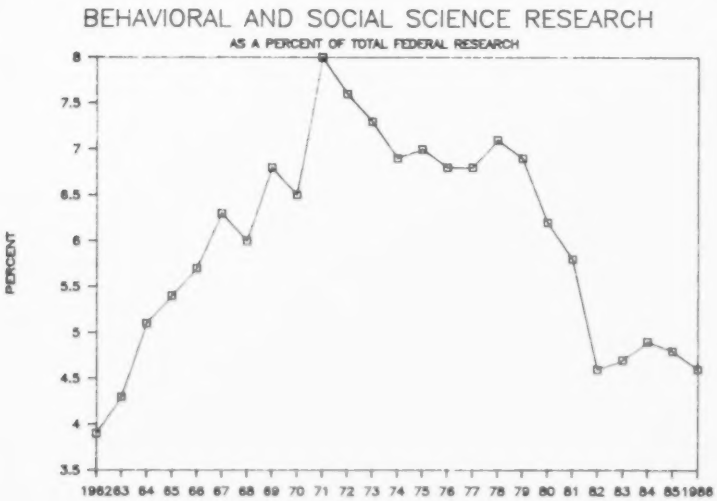

CHART D

It should be pointed out that behavioral and social scientist researchers comprised about 11.3 percent of the U.S. population of research scientists and engineers in 1983.[8] Thus, these scientists received Federal research funds in 1983 at about slightly less than half the level that would be expected if all research scientists and engineers were expected to receive Federal research funds proportional to their size in the research pool.

There are also other ways to portray funding patterns. Chart B shows a decline in terms of constant dollars of support for behavioral and social research, starting in 1978. Funding reached a nadir of about $289 million in 1982, and has started a slow rise since then, and appears to be stabilizing (at least for 1984 and 1985) at about $330 million. The important fact to point out, however, is

[8] Calculated from data in Table B-11, U.S. National Science Foundation. Science and Engineering Personnel: A National Overview. Washington, U.S. Govt. Print. Off., 1985. p. 105–107. NSF 85–302.

that the average constant dollar obligation level for the behavioral and social sciences, at $313 million for the period 1982 to 1985, is about $40 million or 12 percent lower than the average Federal obligation level for these sciences in terms of real dollars for the period 1965 to 1970, the previous "low level" funding period. The only reasonably accurate trend data that are available which use internally consistent methods to estimate growth in the number of scientists annually, are for the period 1970 to 1980. They show that the growth in the number of psychologists and social scientists employed in scientific and engineering jobs over this time period was 42 percent (from 125,000 in 1970 to 177,000 in 1980).[8] During the same period Federal research funding for these disciplines increased about 16 percent in constant dollars.[9] As far as data in this report show, the increases in funding for research from other sources (foundations and industry) do not seem large enough to compensate for the gap observed in Federal funding. (See Chapter VI.) It seems apparent that the bulk of research done in these fields is supported by the Federal Government, and this, social and behavioral scientists argue, makes even more serious their recent complaints, (See Chapter X), that decreases in funding will probably continue to be detrimental to the research progress of the behavioral and social sciences disciplines. (Seventeen percent more behavioral and social scientists were employed in industry in 1980 than in 1970, but there is no information to show how much more research support industry has given to these fields over time.) [10]

b. Federal Support Patterns Favor Social Science Research and Applied Research

Federal support for applied behavioral and social sciences research has always exceeded basic research support in these fields of science. The ratio of support appears to have remained constant over the last thirty years at about 2 to 1 for applied to basic research support in psychology, and at the ratio of about 3 to 1 for applied to basic support in the social sciences. See Table 2. The largest supporters of basic research in the behavioral sciences have been the National Science Foundation, in the Department of Health and Human Services (in the Alcohol, Drug Abuse and Mental Health Administration), and the Department of Defense. The Department of Health and Human Services supports about 60 percent of federally supported basic psychology and social sciences research in universities. NSF, HHS, and the Department of Agriculture have been the largest supporters of social sciences research. See Table 11. The Departments of Labor, Justice, Education, and the Smithsonian Institution also play important roles in supporting social sciences research.

In addition, Federal support for social sciences has always exceeded Federal support for psychology research, but the difference in proportions grew larger over time until, in 1982, behavioral sciences research started to increase as a proportion of the whole.

[8] Table B-1. Scientists and Engineers By Field: 1970-80. *In* U.S. National Science Foundation. Science and Engineering Employment: 1970-80. Special Report NSF 81-310. Washington, U.S. Govt. print. Off., 1981. p. 15.

[10] This is the difference between the average funding level 1970-1980, and the average funding level 1982-1985, in constant dollars.

Table 6 shows that while these two fields of science appear to have both received about 50 percent of total Federal funds for these fields until about the mid-1960s, (with social sciences averaging a bit over 50 percent), Federal funding for social sciences research began to accelerate in 1965 and, from then until 1982, tended to receive between 60 to 70 percent of total funding for these fields. Economics, sociology, and the field social sciences, nec [11] consistently received the largest amounts of support in the social sciences during the period 1962–1985.

B. Behavioral and Social Science Research, by Selected Federal Government Agencies, 1945–1984

This section summarizes the behavioral and social sciences research support programs of major Federal agencies in the post World War II period. Agencies covered, in order, are: the National Science Foundation; the Department of Health and Human Services, including the National Institutes of Health, the National Institute of Mental Health, and the Office of the Assistant Secretary for Planning and Evaluation; the Department of Agriculture, including the Cooperative Service Research Service, the Economic Research Service, and the Forest Service; the Department of Defense; the Department of Education; the Department of Labor; the Department of Justice; the Department of Transportation; the Department of Housing and Urban Development; the Department of Commerce; and the Smithsonian Institution. The U.S. intelligence agencies employ many behavioral and social scientists and support extramural research in the behavioral and social sciences. Their work is not covered in this report.

1. THE NATIONAL SCIENCE FOUNDATION

(See Tables 12, 13, and 14 for data on funding trends.)

The fields of social and behavioral research now are allocated about five percent of the National Science Foundation (NSF) budget. The Foundation supports extramural basic and applied research in most aspects of these sciences, and is the only Federal agency with such a broad research support mission. Fields of support include: psychobiology, memory and cognitive processes, social and developmental psychology, linguistics, anthropology, economics, geography, sociology, measurement methods and data resources, history and philosophy of science, political science, law and social processes, regulation and policy analyses, decision and management sciences, and studies relating to information sciences.[12]

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[11] "Social sciences nec" stands for social sciences, not elsewhere classified. In 1969, the category included multidisciplinary social science research project areas. Also, this category represented "single-discipline projects for which a single field ha[d] not been assigned." (National Science Foundation. Federal Funds for Research, Development, and Other Scientific Activities, Fiscal Years 1968, 1969, and 1970. Surveys of Science Resources Series, v. 18. Washington, U.S. Govt. Print. Off., 1969. NSF 69-31. p. 99.) At that time these areas included research in law and education not elsewhere classified, and socioeconomic geography. Currently, these areas include, "linguistics, research in education, research in history, socioeconomic geography, and research in law, e.g., attempts to assess the impact on society of legal systems and practices." (National Science Foundation. Federal Funds for Research and Development: Fiscal Years 1983, 1984, and 1985. Surveys of Science Resources Series, v. 33. Washington, U.S. Govt. Print. Off., 1985. p. 4.)

[12] U.S. National Science Foundation. Guide to Programs Fiscal Year 1984. Washington, U.S. Govt. Print. Off., 1984. p. 25–27.

The evolution of the behavioral and social sciences funding programs in the Foundation has been long and uneven. In 1950, NSF was established to encourage "the progress of science through the support of basic research and education in the sciences." [13] Although President Harry S. Truman recommended that the social sciences be included in the Foundation's mission, it was decided that support for the social sciences would be "permissive but not mandatory" because of the objections of natural and physical scientists who questioned whether the social sciences really were scientific.[14] Quantitatively and methodologically sophisticated studies began to receive support in an effort to demonstrate that these fields were part of the "legitimate" sciences.[15] In 1958 the earlier decision, which had been reviewed since 1953 by NSF policymakers, was reconsidered and a social science office was created. (For additional details, see Chapter II of this report.)

Between 1945, when discussions about establishing a National Research Foundation began, and 1958, much of Federal support for basic research in the social sciences was provided by the defense agencies—the Departments of the Army, Navy, and Air Force.[16] With the outbreak of the Korean conflict, the main focus of behavioral and social science research conducted by these departments dealt with assessing the testing and selection of recruits, troop mobility and behavior in combat, and racial integration in the Army.[17]

At first, the NSF limited support in the behavioral and social sciences ". . . to dispel apprehensions among natural scientists and members of Congress about any reformist spirit among social scientists, and to take advantage of a broadening acceptance of the social sciences as it developed." [18] Gene Lyons explained in his book, *The Uneasy Partnership . . .*, that

> * * * [T]he first projects of social science support . . . were limited to areas of so-called 'convergence' between the social and natural sciences. In the Biological and Medical Sciences Division, for example, a program was established in anthropological and related sciences, such as functional archaeology, human ecology, demography, psycho-linguistics, and experimental and quantitative social psychology. Similarly, in the Mathematical, Physical, and Engineering Sciences Division, there was a program in sociophysical sciences which included interdisciplinary research in such areas as mathematical social science, human geography, economic engineering, and statistical design . . . [19]

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[13] National Science Board. National Science Foundation. Basic Research in the Mission Agencies: Agency Perspectives on the Conduct and Support of Basic Research. Washington, U.S. Govt. Print. Off., 1978. p. 362.

[14] Lyons, Gene M. The Uneasy Partnership: Social Science and the Federal Government in the Twentieth Century. New York, Russell Sage Foundation, 1969. p. 136.

[15] See, chapter five: Inclusion of the Social Sciences in the Scope of the National Science Foundation, 1945-47: A Groundwork for Future Partnership. *In* Technical Information for Congress, op. cit.

[16] Lyons, op. cit., p. 272.

[17] Ibid., p. 271.

[18] Ibid., p. 141-142, 145. (See, in this book, p. 12, "The Department of Defense" for additional information.)

[19] Ibid., p. 272. According to Gene Lyons in his book, *The Uneasy Partnership*, the "hard" edge of experimental psychology was represented as a designated program area in the biological sciences in NSF, op. cit., p. 271.

In 1960, the Office of Social Sciences was renamed the Division of Social Sciences and assumed the same administrative status in the Research Directorate as the fields of natural and physical sciences. Then Foundation support for the social sciences began to increase, apparently as professional social science associations began to exert pressure.[20] Support for additional social science research programs was added—"political science, history and philosophy of science, science policy, economics, and other studies at the interface of science and society."[21]

Prior to the creation of the Division of Social Sciences, NSF sponsored a few grants and fellowships in the behavioral sciences that have been referred to as "biologically oriented psychology studies" through its Division of Biology.[22] Grant and fellowship awards were made in psychobiology, psychology, and anthropology. After the creation of the Division of Social Sciences, this type of research continued to be supported by the Biology Division, while other social and psychological research projects were placed under the Division of Social Sciences.[23]

Two other important developments occurred in the late 1960s and early 1970s. First, in 1968 the Congress amended the NSF enabling legislation to, among other things, mandate support for the social sciences and the applied sciences. And in 1970, the National Science Foundation created the Research Applied to National Needs Program (RANN) to support research to facilitate the application of science and technology to solve social problems. Explicit applications-oriented social problem research projects were initiated.[24]

In 1975, the Directorate for Biological, Behavioral and Social Sciences (BBS) was established. Three research programs, social psychology (now called social and developmental psychology), anthropology, and linguistics, previously in the Division of Social Sciences, were placed in the new Division of Behavioral and Neural Sciences, along with neurobiology and psychobiology programs. New programs were created in this Division: Memory and Cognitive Processes and Sensory Physiology and Perception.[25] Responsibility for the remaining programs, which included economics; human geography and regional science; sociology, and social indicators; political science; law and social sciences; special projects; history and philosophy of science; and science policy research programs remained in the Division of Social Science in this directorate.[26]

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[20] Ibid., p. 272-273.

[21] U.S. Congress. House. Committee on Science and Technology. Subcommittee on Science, Research, and Technology. The Psycological and Social Sciences Research Support Programs of the National Science Foundation: A Background Report. Committee Print, 95th Cong., 1st Sess. Prepared by the Congressional Research Service, Science Policy Research Division, Library of Congress. Washington, U.S. Govt. Print. Off., 1977. p. 33-34.

[22] Ibid., p. 5.

[23] Ibid., p. 32-33.

[24] See Chapter II in this study for more information.

[25] The Psychological and Social Sciences. Research Support Programs of the National Science Foundation . . . ., op. cit., p. 44.

[26] National Science Foundation. Justification of Estimates of Appropriations to the Congress, Fiscal Year 1977. p. D-IV-1.

TABLE 11.—FEDERAL OBLIGATIONS FOR BASIC RESEARCH IN BEHAVIORAL AND SOCIAL SCIENCE, BY MAJOR AGENCY, FISCAL YEARS 1952–61

[In thousands of dollars]

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
Total, all agencies	NA	1,821	937	2,119	3,473	4,755	8,733	15,392	25,287	32,340
Total, selected agencies		1,546	843	2,083	3,409	4,283	7,961	14,343	23,658	29,995
NSF										
Total, social and behavioral sciences	NA	NA	20	87	220	333	600	2,473	4,420	6,092
Social sciences		NA	20	87	220	333	600	702	4,420	6,092
Psychological science		NA	(1)	(1)	(1)	(1)	(1)	1,771	2,597	3,319
DHEW										
Total, social and behavioral sciences	NA	794	199	127	337	1,025	1,878	5,347	11,375	16,175
Social sciences	NA	794	199	127	337	1,025	1,878	990	1,717	3,240
Psychological science	NA	(1)	(1)	(1)	(1)	(1)	(1)	4,357	9,658	12,935
AGRICULTURE										
Total, social and behavioral sciences	NA	384	530	959	1,195	1,392	2,158	2,302	2,506	2,812
Social sciences	NA	384	530	959	1,195	1,392	2,158	2,302	2,506	2,812
Psychological science	(1)	(1)	(1)	(1)	(1)	(1)	.....	.....	.....	.....
COMMERCE										
Total, social and behavioral sciences	NA	32	44	155	15	.....	.....	.....	41	43
Social sciences	NA	32	44	155	15	.....	.....	.....	41	21
Psychological science	NA	(1)	(1)	(1)	(1)	.....	.....	.....	.....	22
DEFENSE										
Total, social and behavioral sciences	NA	255	NA	NA	579	450	2,944	3,812	4,684	3,978
Social sciences	NA	255	NA	NA	579	450	2,944	.....	104	.....
Psychological science	NA	(1)	NA	NA	(1)	(1)	(1)	3,812	4,580	3,978

TABLE 11.—FEDERAL OBLIGATIONS FOR BASIC RESEARCH IN BEHAVIORAL AND SOCIAL SCIENCE, BY MAJOR AGENCY, FISCAL YEARS 1952–61—Continued

[In thousands of dollars]

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
LABOR										
Total, social and behavioral sciences	NA	NA	NA	720	1,013	1,039	323	346	458	482
Social sciences	NA	NA	NA	720	1,013	1,039	323	346	458	482
Psychological science	NA	NA	NA	.....	.....	.....	(1)	.....	.....	.....
SMITHSONIAN										
Total, social and behavioral sciences	NA	81	50	45	50	54	58	63	174	413
Social sciences	NA	81	50	45	50	54	58	63	174	413
Psychological science	NA	(1)	(1)	(1)	(1)	(1)	(1)	.....	.....	.....

NA—Not available.
[1] Included in the Social Sciences.

Sources: Federal Funds for Science, Series (I–XI): Fiscal Years 1952–1961. NSF/Surveys of Science Resources Series.

NSF is the only Federal agency which supports basic and applied research in most fields of the behavioral and social sciences, conducted primarily extramurally via grants or fellowships awarded to university investigators. Most of the research program is categorized as basic research. See tables 13 and 14. NSF says it is the main supporter of "fundamental social science research in both the public and private sector," [27] and also "plays a speical role in advancing research in neuroscience, cognitive science, psychology, linguistics, and anthropology." [28]

The National Institutes of Health and the ADAMHA agencies support more basic research at universities, but such work is more mission-oriented basic research (more health and disease-oriented) than NSF research which focuses on other aspects of behavioral sciences research.[29]

In 1980, the Division of Social Sciences was renamed the Division of Social and Economic Sciences. In 1981 and 1982, two new research areas were added—regulation and policy analysis and decision and management sciences.[30]

Over the years, NSF's support objectives for the behavioral and social sciences have remained essentially the same: the support of studies that are scientific, objective, and quantitative. Foundation support has encouraged the so-called "behavioral" revolution in the social sciences (one now being challenged by traditionalists who call for more emphasis on policy relevance—on the study of institutions and of cause and effect), database development, and social science methodology.

TABLE 12.—*National Science Foundation Funding for Behavioral and Social Sciences Research as a Percent of Total Federal Funding for These Disciplines, 1970–86*

Fiscal year:	*Percent*
1970	8.5
1971	7.7
1972	10.3
1973	10.6
1974	9.9
1975	11.2
1976	12.0
1977	11.2
1978	9.4
1979	8.8
1980	8.4
1981	7.4
1982	6.6
1983	6.3
1984	6.3
1985	5.6
1986	7.6

[27] National Science Foundation. Justification of Estimates of Appropriations to the Congress, Fiscal Year 1984. p. BBS-IV-2.

[28] National Science Foundation. Twenty-sixth Annual Report for Fiscal Year 1976. Washington, U.S. Govt. Print. Off., 1977. NSF 77-1. p. 59.

[29] See chapter IV for a definition of mission-oriented basic research.

[30] National Science Foundation. Thirtieth Annual Report for Fiscal Year 1980. Washington, U.S. Govt. Print. Off., 1980. p. 64.

TABLE 13.—NATIONAL SCIENCE FOUNDATION AND ALL AGENCIES TOTAL OBLIGATIONS FOR RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY MAJOR PROGRAM ELEMENT, FISCAL YEARS 1952–86

[In thousands of dollars]

	1952	1953	1954	1955	1956	1957	1958
Total, all agencies	10,245	39,269	21,695	25,398	30,104	36,249	39,743
Total, behavioral and social sciences	NA	NA	20	87	220	323	600
Social sciences	NA	NA	20	87	220	323	600
Psychological sciences	(1)	(1)	(1)	(1)	(1)	(1)	(1)
	1959	1960	1961	1962	1963	1964	1965
Total, all agencies	55,313	73,095	95,060	118,025	152,305	198,970	230,868
Total, behavioral and social sciences	2,473	4,420	6,092	11,401	14,671	19,859	19,057
Social sciences	702	1,823	2,773	6,702	8,755	14,135	11,772
Psychological sciences	1,771	2,597	3,319	4,699	5,916	5,715	7,285
	1966	1967	1968	1969	1970	1971	1972
Total, all agencies	265,946	292,660	288,895	313,760	319,839	412,015	423,220
Total, behavioral and social sciences	21,243	24,100	25,345	26,117	27,302	31,882	43,515
Social sciences	13,494	16,060	17,392	19,783	19,582	26,453	36,464
Psychological sciences	7,749	8,040	7,953	6,334	7,720	5,429	7,051
	1973	1974	1975	1976	1977	1978	1979
Total, all agencies	408,714	425,615	441,008	536,452	582,326	682,729	724,694
Total, behavioral and social sciences	43,317	42,066	49,431	64,570	65,397	64,333	64,058
Social sciences	36,876	35,531	40,319	56,321	54,016	55,124	51,605
Psychological sciences	6,441	6,535	9,112	8,249	11,381	9,209	12,453
	1980	1981	1982	1983	1984	1985 (est.)	1986 (est.)
Total, all agencies	722,820	706,325	604,335	676,139	755,461	755,461	721,747
Total, behavioral and social sciences	60,987	51,673	39,907	42,450	47,780	41,999	55,110
Social sciences	47,491	40,341	31,636	33,937	37,416	30,486	42,683
Psychological sciences	13,496	11,332	8,271	8,513	10,364	11,513	12,427

[1] Included in the social sciences.

Source: Federal Funds for Research and Development and other Scientific Activities, Series. Fiscal years 1962–65. Federal Funds for Research and Development: Federal Obligations for Research by Agency and Detailed Field of Science: Fiscal years 1967–85. NSF/Division of Science Resources Studies. 167 p.

TABLE 14.—NATIONAL SCIENCE FOUNDATION AND ALL AGENCIES TOTAL OBLIGATIONS FOR BASIC RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY PROGRAM ELEMENT, FISCAL YEARS 1952–86

[In thousands of dollars]

	1952	1953	1954	1955	1956	1957	1958
Total, all agencies	NA	1,821	937	2,117	3,473	4,755	8,733
Total, behavioral and social sciences	NA	NA	20	87	220	323	600
Social sciences	NA	NA	20	87	220	323	600
Psychological sciences	NA	NA	(1)	(1)	(1)	(1)	(1)
	1959	1960	1961	1962	1963	1964	1965
Total, all agencies	15,392	25,287	32,340	45,582	61,110	81,442	94,694
Total, behavioral and social sciences	2,473	4,420	6,092	13,242	14,671	18,774	18,382
Social sciences	702	1,823	2,773	7,732	8,755	13,059	11,097
Psychological sciences	1,771	2,597	3,319	5,510	5,916	5,715	7,285

TABLE 14.—NATIONAL SCIENCE FOUNDATION AND ALL AGENCIES TOTAL OBLIGATIONS FOR BASIC RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY PROGRAM ELEMENT, FISCAL YEARS 1952–86—Continued

[In thousands of dollars]

	1966	1967	1968	1969	1970	1971	1972
Total, all agencies	97,669	107,756	106,279	119,001	111,994	116,272	131,523
Total, behavioral and social sciences	19,346	22,909	22,352	21,679	21,834	25,474	32,288
Social sciences	11,597	14,869	14,399	15,345	14,234	20,225	26,117
Psychological sciences	7,749	8,040	7,953	6,334	7,600	5,249	6,171
	1973	1974	1975	1976	1977	1978	1979
Total, all agencies	125,561	120,955	132,399	131,955	151,230	208,396	204,787
Total, behavioral and social sciences	30,220	28,224	35,601	42,466	42,906	45,634	46,322
Social sciences	24,689	22,629	27,127	34,217	34,425	36,425	34,440
Psychological *ERR97*sciences	5,531	5,595	8,474	8,249	11,381	9,209	11,882
	1980	1981	1982	1983	1984	1985 (est.)	1986 (est.)
Total, all agencies	231,386	227,943	210,073	230,650	240,442	263,801	263,858
Total, behavioral and social sciences	48,719	40,019	33,272	35,397	42,534	47,698	51,131
Social sciences	36,844	29,953	25,360	27,063	32,355	36,358	38,842
Psychological sciences	11,875	10,066	7,912	8,334	10,179	11,340	12,289

NA—Not available.
[1] Included in the social sciences.

Source: Federal Funds for Research and Development and Other Scientific Activities, Series. Fiscal years 1962–86. Federal Funds for Research and Development: Federal Obligations for Research Agency and Detailed Field of Science: Fiscal years 1967–85. NSF/Division for Science Resources Studies. 167 p.

NSF believes its programs have a substantial leverage effect and that they support a "critical mass" or core of university activities. Generally NSF support for behavioral and social sciences averages about five percent or less of total Foundation research support. However, according to John Slaughter, former director of NSF:

> * * * [T]he importance of our presence in these fields is substantial far beyond the absolute sums involved. For some disciplines of the social and behavioral sciences, the Foundation is the only source of support for investigator-initiated university-based research. . . . In most areas, Foundation funding is important because it supports the longer-range, fundamental work that is essential in building the scientific base of these fields.[31]

NSF's funding for research in the behavioral and social sciences totals about 15 percent less in 1986 than in 1977. The bulk of funding cuts have been made since 1980. See Table 13.

2. THE DEPARTMENT OF HEALTH AND HUMAN SERVICES

The Department of Health and Human Services (DHHS) is the largest supporter of social and behavioral science research in the Federal Government—funding in fiscal year 1986 are estimated at

[31] Testimony by John B. Slaughter before the Subcommittee on Science, Research, and Technology, House Committee on Science and Technology, Mar. 12, 1981. p. 6.

$123.5 million and $153.7 million, respectively. About one-third of this is basic research. Universities conduct about half of the basic behavioral and social research supported by the agency. A substantial amount of behavioral and social research is performed intramurally.[32] See tables 15 and 16.

TABLE 15.—DEPARTMENT OF HEALTH AND HUMAN SERVICES [1] OBLIGATIONS FOR RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY MAJOR PROGRAM ELEMENT, FISCAL YEARS 1952–86

[In thousands of dollars]

	1952	1953	1954	1955	1956	1957	1958
Total, behavioral and social sciences		4,612	1,536	2,092	2,602	4,572	7,263
Social sciences		4,612	1,536	2,092	2,602	4,572	7,263
Psychological sciences	[2]	[2]	[2]	[2]	[2]	[2]	[2]
	1959	1960	1961	1962	1963	1964	1965
Total, behavioral and social sciences	13,391	23,411	41,631	49,187	66,964	89,177	115,288
Social sciences	5,437	7,103	14,721	17,536	27,322	38,083	50,644
Psychological sciences	7,954	16,308	26,910	31,651	39,642	51,094	64,644
	1966	1967	1968	1969	1970	1971	1972
Total, behavioral and social sciences	130,889	90,378	90,489	110,845	106,177	121,778	144,996
Social sciences	68,732	47,872	50,153	65,024	61,540	67,851	84,676
Psychological sciences	62,157	42,506	40,336	45,821	44,637	53,927	60,320
	1973	1974	1975	1976	1977	1978	1979
Total, behavioral and social sciences	142,757	176,334	160,432	198,224	222,968	244,483	173,439
Social sciences	89,504	98,900	99,192	127,620	152,563	159,155	168,740
Psychological sciences	53,352	77,434	61,240	70,604	70,405	85,238	104,699
	1980	1981	1982	1983	1984	1985	1986
Total, behavioral and social sciences	283,004	277,067	237,986	255,812	285,297	302,964	227,234
Social sciences	181,438	166,904	126,210	130,010	138,298	145,252	123,540
Psychological sciences	101,566	110,163	111,776	125,802	146,999	146,999	153,694

[1] The Department of Health, Education, and Welfare prior to 1979.
[2] Included in the social sciences.

Source: Federal Funds for Research and Development, Series. Federal Funds for Research and Development. Federal Obligations for Research by Agency and Detailed Field of Science. Fiscal years 1967–85. NSF/Division of Science Resource Studies. 167 p.

TABLE 16.—DEPARTMENT OF HEALTH AND HUMAN SERVICES,[1] OBLIGATIONS FOR BASIC RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY MAJOR PROGRAM ELEMENT, FISCAL YEARS 1952–86

	1952	1953	1954	1955	1956	1957	1958
Total, behavioral and social sciences	NA	794	199	127	337	1,025	1,878
Social sciences	NA	794	199	127	337	1,025	1,878
Psychological sciences	NA	[2]	[2]	[2]	[2]	[2]	[2]
	1959	1960	1961	1962	1963	1964	1965
Total, behavioral and social sciences	5,347	11,375	16,175	20,575	26,022	36,497	44,649

[32] National Science Board. Discussion Issues, 1981. Social and Behavioral Sciences, V. II, Background Material. National Science Foundation, June 1981. NSB-81-253. p. 2. Detailed descriptions of DHHS behavioral and social research programs may be found in Dusek, E. Ralph, et. al., eds. American Psychological Association's Guide to Research Support. 2nd ed. Washington, APA, 1984, 463 p.

TABLE 16.—DEPARTMENT OF HEALTH AND HUMAN SERVICES,[1] OBLIGATIONS FOR BASIC RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY MAJOR PROGRAM ELEMENT, FISCAL YEARS 1952–86—Continued

	1959	1960	1961	1962	1963	1964	1965
Social sciences	990	1,717	3,240	3,533	5,512	7,844	9,775
Psychological sciences	4,357	9,658	12,935	17,042	20,510	28,653	34,874
	1966	1967	1968	1969	1970	1971	1972
Total, behavioral and social sciences	39,046	33,541	31,280	40,537	41,489	45,794	54,267
Social sciences	7,757	7,171	7,585	16,388	16,860	18,506	23,578
Psychological sciences	31,289	26,370	23,695	24,149	24,629	27,288	30,689
	1973	1974	1975	1976	1977	1978	1979
Total, behavioral and social sciences	43,867	45,233	41,278	39,493	42,447	54,562	68,445
Social sciences	15,913	18,946	14,830	15,384	14,834	19,290	28,347
Psychological sciences	27,954	26,737	26,448	24,109	27,613	35,272	40,098
	1980	1981	1982	1983	1984	1985	1986
Total, behavioral and social sciences	83,958	92,172	78,184	94,061	105,447	112,897	110,952
Social sciences	34,237	33,187	20,908	33,585	35,523	36,732	35,280
Psychological sciences	49,721	58,985	57,276	60,476	69,929	76,165	75,672

NA—Not available.
[1] Prior to 1979, the Department of Health, Education, and Welfare.
[2] Included in the Social Sciences.

Source: Federal Funds for Research and Development, series. Fiscal years 1962–86. Federal Funds for Research and Development: Federal Obligations for Research by Agency and Detailed Field of Science: Fiscal years 1967–86. NSF/Division of Science Resources Studies. 167 p.

Originally created in 1953 as the Department of Health, Education, and Welfare, the agency was redesignated the DHHS in 1979.

In the late 1950s, the National Institute of Health (NIH) and the National Institute of Mental Health (NIMH), at that time a part of NIH but now a part of Alcohol, Drug Abuse and Mental Health Administration (ADAMHA), began to emerge as large supporters of behavioral and social science research.[33] For fiscal year 1985, ADAMHA supported about 63 percent of the behavioral science budget and NIH supported about 37 percent. Of the HHS social research budget, ADAMHA supports about 28 percent, and NIH about 19 percent. For 1985, as in the past, the rest of the social research funds will be obligated by agencies concerned with HHS social services missions: the Health Care Financing Administration, 22 percent; the Office of the Assistant Secretary for Health, 12 percent; the Social Security Administration, 11 percent; and the Human Development Services Office, 2 percent. The Office of Assistant Secretary for Planning and Evaluation (ASPE) is the principal adviser to the Secretary of HHS regarding economic, social, and program analysis concerns. In the past it supported substantial amounts of social research (for instance in fiscal year 1978, about $30 million) but its budget has been cut under the Reagan administration to about $7.5 million, or 5 percent of the total.[34] Several of these agencies will be discussed below.

[33] Federal Funds for Research and Development, Fiscal Years 1983, 1984, and 1985. p. 46.
[34] Federal Funds for Research, Development, and Other Scientific Activities, various volumes.

a. National Institutes of Health

The National Institutes of Health (NIH) is the major biomedical research agency of the Federal Government and the largest single Federal agency supporter of basic research and development (at $4.3 billion, est. for fiscal year 1985.) Its objective is to improve the health of the American people.[35] The NIH Working Group on Health and Behavior developed a draft "working definition" of the kinds of behavioral research it supports. This draft definition indicates that, at least as FY 1986 is concerned, the major foci of behavioral related health research are:

> (1) health-impairing habits and lifestyles, such as smoking, heavy drinking, lacking of exercise, poor diet, and poor hygienic practices; (2) reactions to illness, including minimization of the significance of symptoms, delay in seeking medical care and failure to comply with treatment and rehabilitation regimens; and (3) direct alterations in tissue function through the brain's influence on hormone production and other physiological responses to psychosocial stimuli, particularly stress.[36]

NIH consists of 11 Institutes and five research divisions. Eight institutes appear to support the most readily indentifiable behavioral and social science research through both intramural and extramural projects.[37] NIH's behavioral and social research projects can be labelled most appropriately mission-oriented basic research. Examples of behavioral and social research projects include examination of behavioral factors in nutritional disorders; the behavioral consequences of lung disease; studies of behavior and the immune system; the cultural and social variability of aging across societies; ways to develop means for identifiying behavioral factors in coronary heart disease to see whether families can be used to help patients cope with the stress of recuperative medical regimens; and study of the "sensory processes, mechanisms, and systems of sensation and perception," to better understand sensorimotor problems; the psychosocial problem of the elderly regarding the effect of housing and institutional care upon their health.[38]

b. Alcohol, Drug Abuse, and Mental Health Administration

The National Institute of Mental Health is a component of the Alcohol, Drug Abuse, and Mental Health Administration along with the National Institute on Alcohol Abuse and Alcoholism (NIAAA), and the National Institute on Drug Abuse (NIDA).

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[35] Other components of DHHS that support such research are the Office of the Assistant Secretary for Health, Centers for Disease Control, Food and Drug Administration, Health Resources and Services Administration, Office of Human Development Services, and the Social Security Administration. See: U.S. Department of Health and Human Services. Public Health Service. National Institutes of Health. Justification of Appropriation Estimates for Committee on Appropriations, Fiscal Year 1985, vol. II. p. 1.

[36] NIH Working Group on Health and Behavior. Behavioral and Social Science Research at the National Institutes of Health. Draft, Oct. 31, 1985. p. 3.

[37] The eight institutes include the National Cancer Institute, National Heart, Lung, and Blood Institute, National Institute of Dental Research, National Institute of Neurological and Communicative Disorders and Strokes, National Institute of Arthritis, Metabolism, and Digestive Diseases, National Institute of Child Health and Human Development, National Eye Institute, and the National Institute on Aging. See: American Association for the Advancement of Science. AAAS Report X: Research and Development, FY 1986, Interagency Working Group, 1985, Washington, D.C., p. 147-148.

[38] Ibid., p. 150. and Abramson, op. cit., p. 178-194.

ADAMHA is the "lead Federal agency in the national effort to curtail the problems of alcohol abuse and alcoholism, drug abuse, and mental and emotional illness.[39] Before NIMH separated from NIH[40] and joined ADAMHA, it conducted the bulk of behavioral science research done by NIH.[41] In fact, the NIMH has funded basic and applied research in the mental health and illness areas since 1949. Many programs that are sponsored by the NIAAA and NIDA originated through NIMH.[42]

According to a Behavioral Sciences Panel Report that appeared in a 1965 NIH Study Committee report, NIH has supported "research and training in all sociology areas and most areas of anthropology.[43] Most of this research was conducted by the NIMH.

NIMH research work, in the past, encompassed " . . . social work, nursing, certain interdisciplinary fields (mental health, relevant biological and biochemical research, experimental social psychology) and certain emerging fields (linguistics, computer sciences)." [44] NIMH has done work in such areas as "the early detection of language and learning disabilities and the prevention of secondary emotional and interpersonal problems"; the causes of mental illness with special consideration given to depression and suicide; and the cause and prevention of rape, among other topics.[45] The main goals of these studies were to gain new knowledge with respect to causes, diagnoses, treatment, and control. NIMH, along with NIAAA and NIDA, support mission-oriented research through basic, clinical, and applied research grants through extramural and intramural research programs.

In 1982, the ADAMHA announced that it would curtail the scope of its sponsorship of social research studies to those that are focused explicitly on mental illness or mental health. (See Chapter 2.) NIAAA supports research on such topics as psychological and social determinants and consequences of alcohol abuse prevention, and treatment. NIDA research focuses on similar kinds of studies relating to drug abuse.

c. The Office of Assistant Secretary for Planning and Evaluation

The Office of Assistant Secretary for Planning and Evaluation (ASPE) has had the function of coordinating DHHS ". . . activities in economic and social analysis, program analysis and planning, and evaluation activities; and ensures that Department policy and program planning appropriately reflects the results of these activities." [46] One of the ASPE's major responsibilities has been to devel-

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[39] U.S. National Science Foundation. Basic Research in the Mission Agencies, Agency Perspectives on the Conduct and Support of Basic Research, Washington, U.S. Govt. Print Off., 1978. p. 88.

[40] According to a spokaman at NIMH, in 1967, NIMH separated from NIH. In 1968, the Health Services and Mental Health Administration (HSMA) was created and NIMH joined that organization. In June 1973, HSMA disbanded. NIMH was a "free standing" institution until Sept. 1973 when it became a part of ADAMHA.

[41] Basic Research in the Mission Agencies, op. cit., p. 88.

[42] U.S. National Institutes of Health Study Committee. The Behavioral Sciences Panel Report. Biomedical Science and its Administration: A Study of the National Institutes of Health. Washington, The White House, Feb. 1965. U.S. Govt. Print. Off., 1965. p. 130-140. (This report will be referred to as the Behavioral Sciences Panel Report.)

[43] Ibid., p. 132.

[44] National Science Board. Social and Behavioral Sciences: Background Material. Discussion Issues, 1981, v. 2. June 1981. NSB-81-253. p. 2.

[45] The Behavioral Sciences Panel Report, p. 132.

[46] United States Government Manual, 1984/85, p. 267.

op short- and long-range objectives and program evaluations, to guide agency-wide programs in health, education, social services, and human development. The office has focused on interagency policy issues and has played a part in designing new DHHS initiatives.[47]

As of 1977, ASPE was the lead office concerned with poverty research in the Federal Government. In 1973, many of the poverty-related research programs sponsored by the Office of Economic Opportunity had been transferred to the ASPE. On the average about 80 percent of ASPE's research has been classified as applied social research.

The ASPE has supported both social research and program evaluation activities. Such activities have included—"income maintenance and employment; health; other human services (social service, education, etc.); and basic research and statistical data." [48] In addition, ASPE funded researchers and agencies in States and local governments to perform social experiments to determine key behavioral and societal effects on individuals of implementation of a "negative income tax plan." During the 1970s, experiments focused on ways to improve administering income maintenance systems, alternatives in the delivery of the health care in order to "measure the effect of a wide range of cost-sharing insurance plans on the demand for health care and the effects of health status over time," as well as testing State and local government delivery of social and health service programs. [49]

As noted above, ASPE activities were cut back beginning in 1981.

3. THE DEPARTMENT OF AGRICULTURE

Created by the Organic Act of 1862, the Department of Agriculture (USDA) is charged with the mission to "improve and maintain farm income and to develop and expand markets abroad for agricultural products. The Department helps to curb and to cure poverty, hunger and malnutrition. It works to enhance the environment and to maintain . . . production capacity by helping landowners protect the soil, water, forests, and other natural resources." [50]

See Tables 17 and 18 for funding trends for behavioral and social research.

TABLE 17.—DEPARTMENT OF AGRICULTURE OBLIGATIONS FOR RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY MAJOR PROGRAM ELEMENT, FISCAL YEARS 1952–86

[In thousands of dollars]

	1952	1953	1954	1955	1956	1957	1958
Total, behavioral and social sciences	169	8,050	8,233	10,469	13,002	14,766	15,815
Social sciences	169	8,050	8,233	10,469	13,002	14,766	15,815
Psychological sciences	(1)	(1)	(1)	(1)	(1)	(1)	(1)

[47] Abramson, op. cit., p. 245.
[48] Ibid., p. 246.
[49] Ibid., p. 245–246.
[50] The United States Government Manual, 1984/85, p. 94.

TABLE 17.—DEPARTMENT OF AGRICULTURE OBLIGATIONS FOR RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY MAJOR PROGRAM ELEMENT, FISCAL YEARS 1952–86—Continued

[In thousands of dollars]

	1959	1960	1961	1962	1963	1964	1965
Total, behavioral and social sciences	16,605	16,760	18,767	21,000	21,690	22,249	25,793
Social sciences	16,605	16,760	18,767	21,000	21,690	22,249	25,793
Psychological sciences							

	1966	1967	1968	1969	1970	1971	1972
Total, behavioral and social sciences	26,610	29,760	29,733	31,642	33,695	36,847	41,212
Social sciences	28,610	29,760	29,733	31,642	33,695	36,816	41,170
Psychological sciences				34	32	31	42

	1973	1974	1975	1976	1977	1978	1979
Total, behavioral and social sciences	43,532	45,327	50,700	56,413	64,271	74,623	81,805
Social sciences	43,506	45,301	50,700	56,338	64,186	74,522	81,703
Psychological sciences	26	26		75	85	101	102

	1980	1981	1982	1983	1984	1985 (est.)	1986 (est.)
Total, behavioral and social sciences	83,835	88,236	90,045	98,042	82,647	87,419	82,556
Social sciences	83,729	88,236	89,860	97,938	82,478	87,232	82,494
Psychological sciences	106		185	104	169	187	162

[1] Included in the social sciences.

Source: Federal Funds for Research and Development, series. Fiscal years 1962–86. Federal Funds for Research and Development: Federal Obligations for Research and by Agency and Detailed Field of Science: Fiscal years 1967–85. NSF/Division of Science Resources Studies. 167p.

TABLE 18.—DEPARTMENT OF AGRICULTURE OBLIGATIONS FOR BASIC RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY MAJOR PROGRAM ELEMENT, FISCAL YEARS 1952–86

[In thousands of dollars]

	1952	1953	1954	1955	1956	1957	1958
Total, behavioral and social sciences	NA	384	530	959	1,195	1,392	2,158
Social sciences	NA	384	530	959	1,195	1,392	2,158
Psychological sciences	NA	(1)	(1)	(1)	(1)	(1)	(1)

	1959	1960	1961	1962	1963	1964	1965
Total, behavioral and social sciences	2,302	2,506	2,812	3,451	3,915	4,727	5,239
Social Sciences	2,302	2,506	2,812	3,451	3,915	4,727	5,239
Psychological sciences	(1)	(1)	(1)	(1)	(1)	(1)	

	1966	1967	1968	1969	1970	1971	1972
Total, behavioral and social sciences	6,251	7,985	8,590	9,930	10,074	11,460	12,068
Social sciences	6,251	7,985	8,590	9,918	10,069	11,455	12,042
Psychological sciences	(1)	(1)	(1)	12	5	5	26

	1973	1974	1975	1976	1977	1978	1979
Total, behavioral and social sciences	12,783	13,439	12,484	14,020	15,790	16,890	20,366
Social Sciences	12,769	13,431	12,484	13,997	15,764	16,859	20,335
Psychological sciences	14	8		23	26	31	31

	1980	1981	1982	1983	1984	1985	1986
Total, behavioral and social sciences	22,367	21,221	22,466	23,851	12,781	13,627	12,881
Social sciences	22,333	21,221	22,350	23,812	12,739	13,580	12,841

TABLE 18.—DEPARTMENT OF AGRICULTURE OBLIGATIONS FOR BASIC RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY MAJOR PROGRAM ELEMENT, FISCAL YEARS 1952–86—Continued

[In thousands of dollars]

	1980	1981	1982	1983	1984	1985	1986
Psychological sciences	34		116	39	42	47	40

NA—Not available.
[1] Included in the Social Sciences.

Source: Federal Funds for Research and Development, Series. Fiscal years, 1962–86. Federal Funds for Research and Development: Federal Obligations for Research by Agency and Detailed Field of Science: Fiscal years 1967–85. NSF/Division of Science Resources Studies. 167 p.

Today the Department is the second largest Federal agency supporter of social sciences after the HHS. Economic and social research has always been important to the agricultural mission. According to Lyons:

> * * * Almost from its establishment in 1862, the Department created an important place for scientific research . . . and gave high priority to the dissemination of scientific knowledge to farmers. This research came to include an impressive program of statistical inventories of rural populations and agricultural extension services. It was in land grant schools such as the University of Wisconsin . . . that agricultural economics and rural sociology first became subjects of scholarly and scientific interest.

Support was then extended to other mission-related subjects, such as the impact of industrialization and mechanization, marketing practices, the economic dislocations of farmers.[51]

In the early 1960s the Department of Agriculture supported, on average, about 18 percent of Federal funding for behavioral and social research annually. The percentage decreased during the 1970s, fluctuating between 11 and 12 percent and then increased by one or two percentage points during the 1980s. It is estimated that in fiscal year 1986, the Department will obligate about $82.6 million for these fields, out of a total research budget of $418.5 million. Almost all of this $82.6 million is for social science, about 80 percent is applied.

The Cooperative State Research Services (CSRS) and the Economic Research Service (ERS) funded most basic and applied social science research from the early 1960s through the early 1980s, followed by the Forest Service. The USDA began a small amount of funding for behavioral science research in the late 1960s. Such research has been supported at different times either by the Agricultural Research Service, the ERS, or the Forest Service. Discussed next will be the programs of CSRS.

a. The Cooperative State Research Service

The Cooperative State Research Service (CSRS), created in 1961, "provides . . . financial support to the State Agricultural Experiment Stations (SAES), cooperating forestry schools, the land-grant

[51] Lyons, op. cit., p. 31–32.

colleges of 1890, and the Tuskegee Institute," [52] through research grants.[53] In contrast to other USDA agencies, CSRS supports mostly exramural research. It has the largest budget for basic and applied social science research in the USDA and supports three grant programs.

State Agricultural Experiment Stations receive research grants through the Hatch Act of 1887 in six areas—(1) "natural resources; (2) forest resources; (3) crop resources; (4) animal resources; (5) people, communities, and institutions; and (6) competition, trade adjustments, and income policy." [54] A second grant program, generated as a supplement to the Hatch Act of 1887, includes two components which emphasize national problems such as food and agriculture policies, pest management, transporation, marketing and storage; and a program especially for land-grant colleges and Tuskegee Institute which explores ways to provide aid to disadvantaged rural people and small farmers.

A third grant program offers graduate training in forestry in land-grant colleges, and encourages States through SAES to conduct forest research. Social science research programs include "management and protection of forest lands for outdoor recreation and development of policies for the management of forest lands for harvesting and marketing of forest products." [55] It is estimated that in 1986, the CSRS funded social sciences research at a total of $27.6 million.

b. The Economic Research Service

The Economic Research Service, was created in September 1981 by separating "the functions previously performed by the Economics and Statistics Service into two new program agencies, the Economic Research Service and the Statistical Reporting Service." [56] The origin of ERS dates back to 1922 with the creation of the Bureau of Agricultural Economics.[57] The mission of the ERS is to provide timely and reliable agricultural economic information to local, State, and Federal decisionmakers. Such information includes, "research, forecasts of major agricultural economic indicators, policy analysis, and data." [58]

Most of the social science research conducted at ERS is intramural. ERS performs all facets of social and economic research that concern the "food and fiber sector, use of [the] Nation's resources, economic growth, and quality of life in rural America." [59] These areas cover "estimates of current resource use and availability, output and distribution of food and fiber, forecasts and projections of resource use and output, adjustments and performance in the food and fiber sector . . . ." [60]

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[52] Basic Research in the Mission Agencies, op. cit., p. 30.
[53] Abramson, op. cit., p. 62.
[54] Ibid., p. 63.
[55] Abramson, op. cit., p. 64.
[56] U.S. Congress. House. Committee on Appropriations. Subcommittee on Agriculture, Rural Development and Related Agencies Appropriations for 1983. Hearings, 97th Cong., 2d Sess. Washington, U.S. Govt. Print Off., 1982. p. 715.
[57] Abramson, op. cit., p. 51.
[58] U.S. Congress. House. Agriculture, Rural Development and Related Agencies Appropriations for 1983, op. cit., p. 715.
[59] Basic Research in the Mission Agencies, op. cit., p. 32.
[60] Ibid.

ERS research priorities are decided by agency leaders interacting with the Secretary of Agriculture, congressional committees, and other agencies and organizations. ERS works with Federal and State agencies, the State Agricultural Experiment Stations, 1,890 colleges and the Tuskegee Institute, as well as Regional Centers for Rural Development, and others as necessary.[61]

In the FY 1985 budget, the ERS intended to support $44.6 million for research in the social sciences.[62]

c. The Forest Service

In FY 1984, the Forest Service was the third largest supporter of social science research in the USDA. Most of the funding goes for applied research.[63] Both intramural and extramural research are supported through eight regional forest experiment stations and the Forest Products Laboratory.[64] The Service uses cooperative research agreements, grants, and contracts to support the research mission.[65]

This is mission-oriented research support, intended to provide a foundation for applying and developing new technology.[66] Social and behavioral research supported by the Forest Recreation and Related Human Environment program determines "who uses outdoor recreation facilities, why, and what benefit is gained; how to design facilities and preserve the environment to enhance recreational opportunities; and how to increase safety and discourage vandalism, theft, and littering." [67]

4. THE DEPARTMENT OF DEFENSE

The Department of Defense (DOD) became an Executive department of the Federal Government with passage of the National Security Act Amendments of 1949. Its major function is to deter war and protect the security of the Nation.[68]

In the fiscal year 1986, the DOD will obligate an estimated $7 million for support of social science research and $117 million for the support of behavioral science research. Most of this funding is used for applied psychology research.[69] See Tables 19 and 20.

Immediately following World War II the defense agencies, the Departments of the Army, Navy, and Air Force, had conducted the bulk of social science research in the Federal Government. In fact, by the early 1950s, about 40 percent of Federal support for social science research was supported by the military, basically through the Department of the Navy's Office of Naval Research. During the late 1950s, however, other agencies were created and DOD support

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[61] Ibid.
[62] Federal Funds for Research and Development, Fiscal Years 1984, 1985, and 1986, p. 35.
[63] Federal Funds for Research and Development, Fiscal Years 1983, 1984, and 1985, p. 48, 93.
[64] American Association for the Advancement of Science. AAAS Report X: Research and Development, FY 1986. Intersociety Working Group. Washington, American Association for the Advancement of Science, 1985. p. 88.
[65] Basic Research in the Mission Agencies, op. cit., p. 33, and American Psychological Association. Guide to Research Support. 2nd ed. Scientific Affairs Office. E. Ralph Dusek, Virginia E. Holt, Marti E. Burke, and Alan G. Kraut, eds. Washington, American Psychological Association, 1984. p. 57.
[66] Basic Research in the Mission Agencies, p. 33.
[67] Ibid.
[68] The United States Governmental Manual, 1984/85, p. 159.
[69] Federal Funds for Research and Development: Fiscal Years 1983, 1984, and 1985, p. 46, 93.

for this type of research declined both as a percent of total Federal research and DOD research.[70]

TABLE 19.—DEPARTMENT OF DEFENSE OBLIGATIONS FOR RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY MAJOR PROGRAM ELEMENT, FISCAL YEARS 1952–86

[In thousands of dollars]

	1952	1953	1954	1955	1956	1957	1958
Total, behavioral and social sciences	9,631	4,955	8,743	9,135	10,082	11,475	10,658
Social sciences	9,631	4,955	8,743	9,135	10,082	11,475	10,658
Psychological sciences	(1)	(1)	(1)	(1)	(1)	(1)	(1)
	1959	1960	1961	1962	1963	1964	1965
Total, behavioral and social sciences	13,105	18,463	17,392	15,316	23,672	36,774	26,207
Social sciences	308	504	215	203	3,808	5,665	4,886
Psychological sciences	12,797	17,959	17,177	15,113	19,864	31,109	21,321
	1966	1967	1968	1969	1970	1971	1972
Total, behavioral and social sciences	30,152	32,350	28,829	30,063	35,044	34,788	36,751
Social sciences	8,437	8,912	6,074	7,717	5,123	6,133	8,109
Psychological sciences	21,715	23,438	22,755	22,346	19,921	28,655	28,642
	1973	1974	1975	1976	1977	1978	1979
Total, behavioral and social sciences	44,021	43,580	45,109	45,497	53,558	60,024	69,217
Social sciences	6,800	9,330	5,536	5,213	3,555	5,933	8,442
Psychological sciences	37,221	34,250	39,573	40,284	50,003	54,091	60,775
	1980	1981	1982	1983	1984	1985 (est.)	1986 (est.)
Total, behavioral and social sciences	68,672	76,037	88,336	95,604	93,547	107,744	124,249
Social sciences	5,120	4,726	4,845	7,140	3,949	7,185	7,445
Psychological sciences	63,552	71,311	83,491	88,464	89,598	100,559	116,804

[1] Included in the social sciences.

Source: Federal Funds for Research and Development, and other Scientific Activities, Series. Fiscal years 1962–66, Fiscal Years 1984, 1985, and 1986. Federal Funds for Research and Development: Federal Obligations for Research by Agency and Detailed Field of Science: Fiscal years 1967–85. NSF/Division of Science Resources Studies. 167 p.

TABLE 20.—DEPARTMENT OF DEFENSE OBLIGATIONS FOR BASIC RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY MAJOR PROGRAM ELEMENT, FISCAL YEARS 1952–86

[In thousands of dollars]

	1952	1953	1954	1955	1956	1957	1958
Total, behavioral and social sciences	NA	255	NA	NA	579	450	2,944
Social sciences	NA	255	NA	NA	579	450	2,944
Psychological sciences	NA	(1)	(1)	(1)	(1)	(1)	
	1959	1960	1961	1962	1963	1964	1965
Total, behavioral and social sciences	3,812	4,684	3,978	4,402	6,734	8,420	10,215
Social sciences		104				1,387	2,260
Psychological sciences	3,812	4,580	3,978	4,402	6,734	7,033	7,955
	1966	1967	1968	1969	1970	1971	1972
Total, behavioral and social sciences	10,672	12,684	9,551	15,526	13,503	13,480	13,706
Social sciences	2,695	3,450	2,724	3,766	2,247	2,896	2,674

[70] Abramson, op. cit., p. 104.

TABLE 20.—DEPARTMENT OF DEFENSE OBLIGATIONS FOR BASIC RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY MAJOR PROGRAM ELEMENT, FISCAL YEARS 1952–86—Continued

[In thousands of dollars]

	1966	1967	1968	1969	1970	1971	1972
Psychological sciences	7,977	9,234	6,827	11,760	11,256	10,584	11,032
	1973	1974	1975	1976	1977	1978	1979
Total, behavioral and social sciences	11,696	14,211	11,296	12,046	14,937	20,393	22,463
Social sciences	2,094	2,814	1,803	1,446	1,501	1,651	1,958
Psychological sciences	9,602	11,397	9,493	10,600	13,436	18,742	20,505
	1980	1981	1982	1983	1984	1985 (est.)	1986 (est.)
Total, behavioral and social sciences	22,924	22,887	24,849	23,942	25,227	29,237	31,080
Social sciences	4,434	3,961	3,716	3,201	1,823	1,793	2,036
Psychological sciences	18,490	18,926	21,133	20,741	23,404	27,444	29,044

NA—Not available.
[1] Included in the social sciences.

Source: Federal Funds for Research and Development, and other Scientific Activities, series. Fiscal years 1962–66. Fiscal years 1984, 1985, and 1986. Federal Funds for Research and Development: Federal Obligations for Research, by Agency and Detailed Field of Science: Fiscal years 1967–85. NSF/Division of Science Resources Studies. 167 p.

Cutbacks in DOD's support for social research were accelerated by criticisms made about DOD support of social research studies dealing with counterrevolutionary movements and counterinsurgency in other countries, especially with Project Camelot.[71] As table 19 demonstrates, in 1966 about 28 percent of DOD's funding for behavioral and social research went to the support of social sciences, essentially for studies of this nature. After the criticism surrounding the project, the passage of the Mansfield amendment which limited DOD's support of basic research to explicit mission objectives, and shifting of attention to winning the war in Vietnam, support for social sciences research began to decrease, as a proportion of total research funding. In the fiscal year 1985, an estimated 5.6 percent of DOD's budget for research will go to social science research.

The aim of DOD behavioral research is to obtain a better understanding of organizational effectiveness to determine how individuals adapt to work in organizations.[72] There are also studies of intergroup relations to see how persons from different ethnic cultures and backgrounds can work together effectively in crews, teams, and units, for example. Studies are conducted of ways to improve leadership and management training programs. Research also focuses on personnel and training, cognition, vision, hearing and memory, and artificial intelligence. Engineering psychology focuses on seeking a better understanding of "human perceptual, decision-making, and psychomotor behavior in order to develop general guidelines for the design of compatible interfaces between people and their machines."

[71] See for example, Lyons, op. cit., p. 150, and Chapter 2 of this study.
[72] U.S. Department of Defense. Basic Research Program. Washington, U.S. Govt. Print. Off., 1980. p. 35.

The bulk of DOD's behavioral and social research budget has always gone to psychological studies. In recent years, over 90 percent of DOD's behavioral and social research budget has been used for psychology research.[73] In fact DOD's support for psychological sciences research has about doubled in the last six years, from $63.6 million in fiscal year 1980 to $116.8 million, est. in fiscal year 1986.

In-house and extramural basic research programs are supported. More than 70 laboratories do in-house basic research and "provide analytical advice and technical services in planning DOD's [general] R&D program." [74] Extramural basic research is conducted in both industrial and university laboratories. The three services' research offices—the Army Research Office (ARO), the Air Force Office of Scientific Research (AFOSR), the Office of Naval Research (ONR)—and the Defense Advanced Research Projects Agency (DARPA), "support most of the DOD basic research in universities . . . ."[75]

Over the years, DOD has been a large supporter of development programs through the Air Force, Army, Navy, and other defense agencies.[76] Some examples of development programs using behavioral and social science research are as follows:[77]

The Air Force has supported the development of instructional materials, nonverbal aptitude tests directed toward eliminating cultural bias in tests, as well as Vocational Aptitude Battery Tests.

The Army also has developed testing and training materials. It supported the development of a "cost-effective, equitable, and realistic performance based test in lieu of written tests for measuring levels of skill in army jobs." A key training program developed by the Army was called the Training Extension Course (TEC), which provided a variety of personalized training courses ranging from diverse military skills to basic leadership. In addition, various handbooks have been prepared including "ways to improve race relations in the Army, . . . alcohol and drug abuse problems . . ., and environmental impact analysis [for the Army Corps of Engineers]."

The Navy, as the Air Force and Army, has developed computer-assisted training methods as well as using mini-computers for the purpose of perfecting training efficiency and management. Additionally, the Navy has devised tests "that minimize cultural bias in word and picture analogy tests."[78]

5. THE DEPARTMENT OF EDUCATION

The Department of Education (DOEd) is the cabinet-level department that "establishes policy for, administers, and coordinates most Federal assistance to education." [79] Prior to becoming a sepa-

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[73] National Science Board. Social and Behavioral Sciences, Background Material, Discussion Issues, 1981. p. 5.
[74] U.S. Department of Defense. Basic Research Program. Washington, U.S. Govt. Print. Off. p. 3.
[75] Ibid.
[76] Abramson, op. cit., p. 104.
[77] Ibid., p. 110–122.
[78] U.S. Department of Defense. Basic Research Program, Passim and Abramson.
[79] United States Government Manual, 1984/85, p. 242.

rate agency, in 1979, the DOEd was a division within the Department of Health, Education, and Welfare. See Table 21 and 22.

TABLE 21.—DEPARTMENT OF EDUCATION OBLIGATIONS FOR RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY MAJOR PROGRAM ELEMENT, FISCAL YEARS 1979–86

[In thousands of dollars]

	1979	1980	1981	1982	1983 [1]	1984	1985 (est.)	1986 (est.)
Total, behavioral and social sciences	63,300	54,096	54,419	37,810	54,165	54,520	61,072	55,627
Total, social sciences	61,384	52,044	52,262	35,039	51,656	51,694	58,009	52,662
Total, psychological sciences	1,196	2,052	2,157	2,771	2,509	2,826	3,063	2,965

[1] The 1983 budget proposed that the Department of Education be replaced by the Foundation for Education Assistance.

Source: Federal Funds for Research and Development, Series. Fiscal years 1979–86.

TABLE 22.—DEPARTMENT OF EDUCATION OBLIGATIONS FOR BASIC RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY MAJOR PROGRAM ELEMENT, FISCAL YEARS 1979–86

[In thousands of dollars]

	1979	1980	1981 (est.) [1]	1982	1983	1984	1985	1986 (est.)
Total, behavioral and social sciences	20,567	17,583	17,338	13,729	14,182	12,221	12,347	11,409
Total, social sciences	20,567	17,583	17,338	13,729	14,182	12,221	12,293	11,409
Total, psychological sciences							54	

[1] Apparently, in fiscal year 1981, no funding was appropriated to the Department.

Source: Federal Funds for Research and Development, Series. Fiscal years 1979–86.

In the late 1950s, the research program of the Office of Education, one of the educational agencies within HEW's Education Division, was enlarged with the addition of cooperative research programs that were conducted through grants awarded to universities and non-profit research organizations to perform both research and demonstration projects.[80] Through the Elementary and Secondary Education Act of 1965, the education program was expanded to create research and development centers in specialized disciplines of education, in educational laboratories, and in clearinghouses for information.[81] In addition, Title IV of that Act changed the direction of education research. "Whereas earlier research had been limited to small and unrelated projects for the most part," Gene Lyons reported, "the new financing allowed for large and sustained projects, particularly in the research and development centers and laboratories of the universities. In fact," he continued, "research was now substantially shifted from schools and State departments of education, where it had been almost exclusively concentrated, to groups of social scientists in universities and to non-profit and profit organizations." [82]

By 1977, education was the largest social research and development area in HEW. In FY 1977, the three educational agencies—the Office of the Assistant Secretary for Education, the Office of Education (OE), and the National Institute of Education (NIE) sup-

[80] Lyons, Gene M. The Uneasy Partnership, op. cit., p. 235–236.
[81] Ibid., p. 236.
[82] Ibid., p. 236–237.

ported almost $313 million for social research and development. The OE alone received $200.3 million for these purposes; the NIE funded $95.0 million; and the Assistant Secretary for Education sponsored $17.6 million.[83]

The National Institute of Education (NIE) is the major research component of the DOEd and the leading Federal agency for educational research and development. The mission of NIE is "to promote educational equity and to improve the quality of educational practice." [84] Considerable research is performed at NIE-affiliated national centers and regional laboratories. Research is mission-oriented, and most is extramurally performed through grant and contract awards. NIE research is supported through three major programs—dissemination and improvement of practice, educational policy and organization, and teaching and learning. Research priorities are established by "congressional and executive mandates, problems confronting education, and promising directions of research." [85] Some areas of study include—"language and literacy; basic cognitive skills; teaching; social processes; mathematics learning; policy and management studies; and out-of-school education." [86]

The NIE development program provides curriculum and instructional materials for classroom use and testing materials to determine how well individuals are learning a skill or subject.[87]

It is estimated that for the fiscal year 1986, the Department of Education will support a research agenda totaling about $82.7 million, of which 67 percent is social sciences research, mainly applied research. NSF data show that funding for educational research has decreased 17 percent, and 26 percent in terms of inflation adjusted real dollars, from 1980 to 1985.[88]

6. THE DEPARTMENT OF LABOR

The Department of Labor (DOL) was created in 1913 and has the mission to "foster, promote, and develop the welfare of the wage earners of the United States, to improve their working conditions, and to advance their opportunities for profitable employment." [89] To carry out this mission, the DOL supports a program of social research—applied, basic, and evaluation research—on mission-related issues. See tables 23 and 24.

The Department collects and publishes numerous social statistics reports which are instrumental in shaping poverty and labor policies at all levels of government. Statistical series include:

- data on the labor force, employment, and unemployment levels;
- the consumer price index;
- the wholesale price index; and
- occupational wage and salaries data.

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[83] Abramson, op. cit., p. 195.
[84] National Science Board. Social and Behavioral Science, Background Material, Discussion Issues, 1981. p. 6.
[85] Abramson, op. cit., p. 206-207.
[86] American Psychological Association. Guide to Research Support, op. cit., p. 89.
[87] Ibid.
[88] Federal Funds for Research and Development, fiscal years 1983, 1984, and 1985. p. 46, 93.
[89] United States Government Manual, 1984/85, p. 365.

With the passage of the Manpower Development and Training Act of 1962, the DOL's traditional research program in the Bureau of Labor Statistics was enlarged to include broader research into manpower problems. This act specifically provided for research that would "deal more broadly with the effects of automation, the conditions of mobility, the training and improvement of the labor force, and the determinants of future manpower needs."[90]

At first, DOL's manpower research program consisted mostly of contract work to examine short-range manpower problems. Subsequently, two grant programs were added, one to fund graduate students, and the other to award institutional grants to universities in order to increase the number of social scientists working in the manpower field, and to awaken more interest in the subject. Additional research responsibilities were added later in the Office of Manpower Policy, Evaluation and Research to promote "experimental projects, . . . [evaluate] government labor and employment programs, [and conduct] activities . . . [to] contribute to the accumulation of knowledge on manpower problems."[91]

DOL's social science research is mission-oriented, mostly applied work, and includes, "social and economics aspects of manpower, training and employment; wages and standards; industrial relations; effect of trade policies; productivity and technology; [and] occupational safety and health."[92] Currently most social science research is supported by the Occupational Safety and Health Administration (OSHA), the Employment and Training Administration (ETA), the Office of the Secretary, and the Employment Standards Administration (ESA).

TABLE 23.—DEPARTMENT OF LABOR OBLIGATIONS FOR RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY MAJOR PROGRAM ELEMENT, FISCAL YEARS 1952–86

[In thousands of dollars]

	1952	1953	1954	1955	1956	1957	1958
Total, behavioral and social sciences	18	5,856	NA	1,369	1,333	1,579	1,252
Total, social sciences	18	5,856	NA	1,369	1,333	1,579	1,252
Total, psychological sciences	(1)	(1)	(1)	(1)	(1)	(1)	(1)
	1959	1960	1961	1962	1963	1964	1965
Total, behavioral and social sciences	1,170	1,562	1,659	3,274	5,266	6,353	6,104
Total, social sciences	1,170	1,562	1,659	3,274	5,266	6,353	6,104
Total, psychological sciences							
	1966	1967	1968	1969	1970	1971	1972
Total, behavioral and social sciences	8,086	8,644	8,741	8,913	11,286	13,622	13,261
Total, social sciences	8,086	8,644	8,741	8,913	11,286	13,622	13,261
Total, psychological sciences							
	1973	1974	1975	1976	1977	1978	1979
Total, behavioral and social sciences	13,326	17,225	15,278	18,000	18,727	25,711	41,393
Total, social sciences	13,326	17,225	15,278	17,761	18,455	25,313	41,164
Total, psychological sciences			498	239	272	398	229

[90] Lyons, Gene M. The Uneasy Partnership, op. cit., p. 238.
[91] Idem.
[92] Idem.

TABLE 23.—DEPARTMENT OF LABOR OBLIGATIONS FOR RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY MAJOR PROGRAM ELEMENT, FISCAL YEARS 1952–86—Continued

[In thousands of dollars]

	1980	1981	1982	1983	1984	1985 (est.)	1986 (est.)
Total, behavioral and social sciences	36,432	58,197	17,155	17,943	16,259	13,907	14,571
Total, social sciences	36,240	58,197	17,155	17,943	16,259	13,907	14,571
Total, psychological sciences	192						

[1] Included in the social sciences.

Source: Federal Funds for Research and Development, series. Fiscal years 1979–86.

TABLE 24.—DEPARTMENT OF LABOR OBLIGATIONS FOR BASIC RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY MAJOR PROGRAM ELEMENT, FISCAL YEARS 1952–86

[In thousands of dollars]

	1952	1953	1954	1955	1956	1957	1958
Total, behavioral and social sciences	NA			720	1,013	1,039	323
Total, social sciences	NA			720	1,013	1,039	323
Total, psychological sciences	NA	(1)	(1)	(1)	(1)	(1)	(1)
	1959	1960	1961	1962	1963	1964	1965
Total, behavioral and social sciences	346	458	482	978	1,089	1,235	1,424
Total, social sciences	346	458	482	978	1,089	1,235	1,424
Total, psychological sciences							
	1966	1967	1968	1969	1970	1971	1972
Total, behavioral and social sciences	1,604	1,846	1,693	1,912	2,052	2,502	1,103
Total, social sciences	1,604	1,846	1,693	1,912	2,052	2,502	1,103
Total, psychological sciences							
	1973	1974	1975	1976	1977	1978	1979
Total, behavioral and social sciences	1,330	1,199	877	958	703	3,678	2,286
Total, social sciences	1,330	1,199	834	926	664	3,614	2,274
Total, psychological sciences			43	32	39	64	12
	1980	1981	1982	1983	1984	1985 (est.)	1986 (est.)
Total, behavioral and social sciences	3,876	3,740	6,508	5,263	5,020	2,760	4,701
Total, social sciences	3,876	3,740	6,508	5,263	5,020	2,760	4,701
Total, psychological sciences							

NA—Not available.
[1] Included in the social sciences.

Source: Federal Funds for Research and Development: Fiscal years 1962–86.

As an example of DOL social science research, the ETA supports "solicited and unsolicited research projects, as well as specialized grants to universities and colleges to train manpower specialists and for research on new methods to solve manpower problems that contribute to policy formulation."[93] Some areas of particular con-

[93] National Science Board. Social and Behavioral Sciences, Background Material, Discussion Issues, 1981, p. 7.

cern have been "the effectiveness of employment and training programs; welfare reform and large scale job creation; problems of the hard to employ; broad social and economic issues affecting employment and training policies."[94] Currently the ETA program emphasis appears to be shifting toward evaluation research and away from support for longitudinal data bases such as the 20 year ongoing National Longitudinal Surveys of Labor Market Experiences. In addition, some units of the Office of Research and Development within the ETA work with other parts of the organization to aid in the utilization of new research and development methods dealing with manpower problems.[95]

About half of DOL's social science research is conducted intramurally. The rest, extramural research, is performed by industrial firms and universities and colleges.[96] The DOL obligated an estimated $14.6 million for social sciences research in the fiscal year 1986. This is not significantly different from the range of funding levels of the mid-1970s. It does represent a decrease from the higher funding levels in the period 1978 to 1981. The average funding level for those years was about $41 million. The funding level of $14.6 million estimated for 1986 is about 64 percent lower than the average for that period. In terms of constant dollars, DOL social research funding decreased over 60 percent from 1980 to 1986. Decreases are attributable to shifts made during the Reagan Administration. Some funding support has gone to support basic social science research, in the area of economics.[97] No behavioral science research has been funded in DOL since 1980.

7. THE DEPARTMENT OF JUSTICE

The Department of Justice (DOJ), established in 1870, plays a key role in ". . . protecting against criminals and subversion, in ensuring healthy competition of business in our free enterprise system, in safeguarding the consumer, and in enforcing drug, immigration, and naturalization laws." [98] Also, it plays an important role "in protecting [U.S.] citizens through its efforts for effective law enforcement, crime prevention, crime detection, and prosecution and rehabilitation of offenders."[99] See Tables 25 and 26.

TABLE 25.—DEPARTMENT OF JUSTICE OBLIGATIONS FOR RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY MAJOR ELEMENT, FISCAL YEARS 1968–86

[In thousands of dollars]

	1968	1969	1970	1971	1972	1973
Total, behavioral and social sciences	277	1,718	3,775	3,648	5,750	3,968
Total, social science	186	1,148	2,536	2,359	4,450	3,309
Total, psychological sciences	91	570	1,239	1,289	1,300	389

[94] Ibid.
[95] Ibid.
[96] Abramson, op. cit., p. 345.
[97] Federal Funds for Research and Development, Fiscal Years 1983, 1984, and 1985, p. 46, 93.
[98] The United States Government Manual, 1984/85, p. 331.
[99] Ibid.

TABLE 25.—DEPARTMENT OF JUSTICE OBLIGATIONS FOR RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY MAJOR ELEMENT, FISCAL YEARS 1968–86—Continued

[In thousands of dollars]

	1974	1975	1976	1977	1978	1979
Total, behavioral and social sciences	11,589	11,817	16,485	16,364	44,083	27,146
Total social sciences	11,589	11,817	15,329	15,215	38,731	24,896
Total, psychological sciences			1,156	1,149	5,352	2,250

	1980	1981	1982	1983	1984	1985 (est.)	1986 (est.)
Total, behavioral and social sciences	27,414	19,033	14,755	19,140	16,857	19,367	13,250
Total social sciences	24,491	15,633	12,812	17,536	14,736	16,484	12,350
Total, psychological sciences	2,923	3,400	1,943	1,784	2,121	1,883	900

Source: Federal Funds for Research and Development, series. Fiscal years 1968–86.

TABLE 26.—DEPARTMENT OF JUSTICE OBLIGATIONS FOR BASIC RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY MAJOR PROGRAM ELEMENT, FISCAL YEARS 1968–86

[In thousands of dollars]

	1968	1969	1970	1971	1972	1973
Total, behavioral and social sciences	34	43				1,894
Total, social sciences	34	43				1,894
Total, psychological sciences		13				

	1974	1975	1976	1977	1978	1979
Total, behavioral and social sciences	2,089	6,342	4,500	5,100	14,700	7,550
Total, social sciences	2,089	6,342	4,456	4,616	12,107	6,800
Total, psychological sciences			44	484	2,593	750

	1980	1981	1982	1983	1984	1985 (est.)	1986 (est.)
Total, behavioral and social sciences	9,450	4,631	3,087	3,640	4,708	5,533	2,520
Total, social sciences	8,284	3,665	2,613	3,540	3,442	3,950	2,220
Total, psychological sciences	1,166	966	474	100	1,266	1,583	300

Source: Federal Funds for Research and Development, series. Fiscal years 1968–86.

The Department's social and behavioral research programs began in 1968, during the era of expanding social research accompanying the "Great Society" and "War on Poverty" programs.

The National Institute of Justice (NIJ) and the National Institute of Juvenile Justice and Delinquency Prevention Programs (NIJJDPP) support most of the research in the DOJ. Extramural research projects account for almost all behavioral and social science research done through the NIJ. Extensive, long-term research has been conducted through a research agreements program with selected university groups and research organizations.[100] Some of these projects include examining certain criminal justice areas, such as "habitual offenders, community reaction to crime, white collar crime, [and the] relation between employment and crime."[101] In addition, there are "small methodology development

[100] National Science Board. Social and Behavioral Sciences, Background Material, Discussion Issues, 1981, p. 8.
[101] Ibid.

unsolicited research grant programs."[102] The Bureau of Justice Statistics collects data important for research such as statistics on crime, criminal offenders, and operations of criminal justice systems at all levels of government.[103]

DOJ behavioral and social research funding increased over the period fiscal year 1968 to 1980, when it totaled about $27 million, of which the bulk was for social research. The budget decreased 51 percent from 1980 to 1986, when $12.4 million was estimated for social research and $.9 million for behavioral research.

8. THE DEPARTMENT OF TRANSPORTATION

The Department of Transportation was established in 1966 to assure the coordinated, effective administration of the transportation programs of the Federal Government and to develop national transportation policies and programs conducive to the provision of fast, safe, efficient, and convenient transportation at the lowest cost. Obligations for social science research, at $12.2 million for fiscal year 1986, are estimated to comprise about 13 percent of DOT's research budget. About $1.4 million, estimated, will be obligated for behavioral science research programs. See Tables 27 and 28.

TABLE 27.—DEPARTMENT OF TRANSPORTATION OBLIGATIONS FOR RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY MAJOR PROGRAM ELEMENT, FISCAL YEARS 1966–86

[In thousands of dollars]

	1966	1967	1968	1969	1970	1971	1972
Total, behavioral and social sciences	2,258	3,426	5,377	9,562	15,250	11,011	2,229
Total, social sciences	2,258	3,426	5,011	8,591	11,549	7,652	2,056
Total, psychological sciences			366	971	3,701	3,359	173
	1973	1974	1975	1976	1977	1978	1979
Total, behavioral and social sciences	1,735	1,576	1,451	3,458	1,008	1,084	10,190
Total, social sciences	851	1,505	1,451	3,437	942	1,019	10,190
Total, psychological sciences	884	71		21	66	65	
	1980	1981	1982	1983	1984	1985 (est.)	1986 (est.)
Total, behavioral and social sciences	17,846	15,096	11,211	7,737	15,761	12,829	13,556
Total, social sciences	17,846	15,096	10,961	7,590	14,249	11,669	12,176
Total, psychological sciences			250	147	1,512	1,160	1,360

Source: Federal Funds for Research and Development, series. Fiscal years 1966–86.

[102] Ibid.

[103] See, for example, Schlesinger, Steve. Programs of the Bureau of Justice Statistics, *PS*, Spring 1985. Pages 298–302.

TABLE 28.—DEPARTMENT OF TRANSPORTATION OBLIGATIONS FOR BASIC RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY MAJOR PROGRAM ELEMENT, FISCAL YEARS 1966–86

[In thousands of dollars]

	1966	1967	1968	1969	1970	1971	1972
Total, behavioral and social sciences	50	275		202	1,117	13	
Total, Social sciences	50	275		202	1,107		
Total, psychological sciences					10	13	

	1973	1974	1975	1976	1977	1978	1979
Total, behavioral and social sciences							
Total, social sciences							
Total, psychological sciences							

	1980	1981	1982	1983	1984 (est.)	1985 (est.)	1986 (est.)
Total, behavioral and social sciences					446	200	400
Total, Social sciences					446	200	300
Total, psychological sciences							100

Source: Federal Funds for Research and Development, series. Fiscal years 1966–86.

The bulk of DOT's social science research is applied. The National Science Board reported that about 90 percent of the funding goes to the National Highway Traffic Safety Administration for research in "economics, sociology and human factors, related to transportation use, safety and construction."[104]

An example of basic research that DOT conducts in the behavioral and social sciences is research into "the impacts of transportation upon the spatial distribution of economic and social activities, either regionally or nationally. Increased understanding of the relationships between transportation, spatial form, and quality of life can aid in evaluating alternatives which may significantly change transportation characteristics.[105]

The National Research Council reported in 1977 that much DOT social research was performed through individual contracts with universities and other higher education institutions for specific research projects that are the results of general DOT solicitations for transportation-related research.[106]

Through the seven components of the DOT, materials, which use the results of social research, have been developed, including:[107]

—Through the Federal Aviation Administration, handbooks have been prepared for its staff as well as Federal, State, and local officials regarding "environmental impact statements and their preparation." Training materials for pilots have also been prepared.

—The National Highway Traffic Safety Administration (NHTSA) has developed a variety of items, such as curriculm materials to train State and local highway safety managers and driver education curriculum materials. Behavioral and social research

[104] National Science Board. Social and Behavioral Sciences, Background Material, Discussion Issues, 1981. p. 9.
[105] Basic Research in the Mission Agencies, p. 156.
[106] Abramson, op. cit., p. 368–395.
[107] Ibid., p. 374–395.

materials have also been used to support "the development of tests, standards, and screening techniques for identifying persons not capable of driving" and safety manuals and educational materials for bicycles and motorcycle safety.

—The U.S. Coast Guard prepared educational materials concerning boat safety; and

—The Urban Mass Transportation Administration (UMTA) prepares a variety of "handbooks, planning models and guidelines, simulation models, and computer software concerned with 'area-wide demand-response transit.'" Additionally, the Human Resources and Technical Development program within UMTA supports the preparation of curriculum and training items for public transportation managers.

9. THE DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

The Department of Housing and Human Development (HUD) was created in 1965 to deal with the Nation's housing needs and be responsible for programs concerning fair housing opportunities and improving and developing communities.[108] See Table 29.

TABLE 29.—DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT OBLIGATIONS FOR RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY MAJOR PROGRAM ELEMENT, FISCAL YEARS 1966–86 [1]

[In thousands of dollars]

	1966	1967	1968	1969	1970	1971	1972
Total, behavioral and social sciences	921	5,040	4,485	9,125	3,900	1,050	3,491
Total social sciences	921	5,050	4,485	9,125	3,900	1,050	3,491
Total, psychological sciences							
	1973	1974	1975	1976	1977	1978	1979
Total, behavioral and social sciences	16,029	29,763	28,661	32,300	28,945	27,896	20,673
Total social sciences	16,029	29,763	29,661	32,300	28,945	27,896	20,263
Total, psychological sciences							
	1980	1981	1982	1983	1984	1985 (est.)	1986 (est.)
Total, behavioral and social sciences	17,679	14,861	9,176	9,303	5,699	6,699	6,847
Total social sciences	17,679	14,861	9,176	9,303	5,699	6,999	6,847
Total, psychological sciences							

[1] HUD does not support basic research.

Sources: Federal Funds for Research and Development, series. Fiscal years 1966–86.

Initially, with the founding of HUD, there was little time for organizing a meaningful program of research and evaluation because the primary concern was with launching new support programs for cities.[109] By 1970, however, HUD had a total science research budget of $21.8 million. Out of that funding, social science research programs received $3.9 million all of which was used for applied research. No research was conducted in the behavioral sciences.[110]

[108] United States Government Manual, 1984/85, p. 293.

[109] Lyons, Gene M. The Uneasy Partnership, p. 240.

[110] National Science Foundation. Federal Funds for Research and Development and Other Scientific Activities, Fiscal Years 1969, 1970, and 1971. Surveys of Science Resources Series, v. 19. Washington, U.S. Govt. Print. Off., 1970.

Funding accelerated and reached a high in 1976, when about $32 million was obligated. Decreases began thereafter, so that by the fiscal year 1986, the HUD total social science research budget was estimated about $6.8 million, all of it for applied social sciences research.

In 1978, about 90 percent of HUD's behavioral and social research budget was for social science research. Most research, including policy development, economic research, and program evaluation was conducted in-house by HUD's Office of the Assistant Secretary for Policy Development and Research.[111] A small portion went to universities and colleges.[112]

The role of the social science research program, which is related to the mission of HUD, is to "identify, test and demonstrate solutions to housing and community development problems and to make those solutions available to those responsibile for meeting the nation's housing and community development needs at the State and local level."[113]

10. THE DEPARTMENT OF COMMERCE

The Department of Commerce (DOC), created in 1913, "encourages, serves, and promotes the Nation's international trade, economic growth, and technological advancement."[114] See Tables 30 and 31.

TABLE 30.—DEPARTMENT OF COMMERCE OBLIGATIONS FOR RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY MAJOR PROGRAM ELEMENT, FISCAL YEARS 1952–86

[In thousands of dollars]

	1952	1953	1954	1955	1956	1957	1958
Total, behavioral and social sciences	73	1,132	1,063	1,529	1,648	2,038	2,356
Total, social sciences	73	1,132	1,063	1,529	1,648	2,038	2,356
Total, psychological sciences	(1)	(1)	(1)	(1)	(1)	(1)	(1)
	1959	1960	1961	1962	1963	1964	1965
Total, behavioral and social sciences	2,841	3,042	2,554	2,970	3,972	4,796	5,893
Total social sciences	2,828	2,929	2,347	2,860	3,834	4,614	5,630
Total, psychological sciences	13	113	117	110	138	182	263
	1966	1967	1968	1969	1970	1971	1972
Total, behavioral and social sciences	5,476	9,306	12,248	7,074	11,922	6,127	6,489
Total social sciences	5,258	8,860	11,827	6,627	10,826	4,836	5,799
Total, psychological sciences	218	446	421	447	1,096	1,291	690
	1973	1974	1975	1976	1977	1978	1979
Total, behavioral and social sciences	5,667	5,289	7,901	8,843	7,229	10,586	11,475
Total, social sciences	5,542	5,138	7,750	8,634	7,026	10,323	11,243
Total, psychological sciences	125	151	151	209	203	263	232

[111] Abramson, op. cit., p. 280.
[112] National Science Board. Social and Behavioral Sciences, Background Material, Discussion Issues, 1981, p. 9.
[113] Abramson, op. cit., p. 280.
[114] Ibid.

TABLE 30.—DEPARTMENT OF COMMERCE OBLIGATIONS FOR RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY MAJOR PROGRAM ELEMENT, FISCAL YEARS 1952–86—Continued

[In thousands of dollars]

	1980	1981	1982	1983	1984	1985 (est.)	1986 (est.)
Total, behavioral and social sciences	6,958	4,590	3,816	7,965	7,949	6,011	1,162
Total, social sciences	6,735	4,287	3,624	7,675	7,660	5,738	891
Total, psychological sciences	223	303	192	290	289	273	271

[1] Included in social services.

Sources: Federal Funds for Research and Development and other Scientific Activities, series. Fiscal years 1962–66. Fiscal years 1984, 1985, 1986. Federal Funds for Research and Development: Federal Obligations for Research by Agency and Detailed Field of Science: Fiscal years 1967–85. p. 8, 34.

TABLE 31.—DEPARTMENT OF COMMERCE OBLIGATIONS FOR BASIC RESEARCH IN THE BEHAVIORAL AND SOCIAL SCIENCES, BY MAJOR PROGRAM ELEMENT, FISCAL YEARS 1952–86

[In thousands of dollars]

	1952	1953	1954	1955	1956	1957	1958
Total, behavioral and social sciences	NA	32	44	155	15	.....	.....
Total, social sciences	NA	32	44	155	15	.....	.....
Total, psychological sciences	NA	(1)	(1)	(1)	(1)	(1)	(1)
	1959	1960	1961	1962	1963	1964	1965
Total, behavioral and social sciences	.....	41	43	1,590	2,071	2,353	2,623
Total, social sciences	.....	41	21	1,570	2,053	2,305	2,517
Total, psychological sciences	.....	.....	22	20	18	48	106
	1966	1967	1968	1969	1970	1971	1972
Total, behavioral and social sciences	2,622	2,895	3,043	3,228	3,635	148	147
Total, social sciences	2,528	2,796	2,937	3,095	3,526	30	24
Total, psychological sciences	94	99	106	133	109	118	123
	1973	1974	1975	1976	1977	1978	1979
Total, behavioral and social sciences	77	88	91	1,717	1,245	2,799	628
Total, social sciences	11	11	11	1,675	1,200	2,690	500
Total, psychological sciences	66	77	80	42	45	109	128
	1980	1981	1982	1983	1984	1985 (est.)	1986 (est.)
Total, behavioral and social sciences	404	284	59	97	97	265	79
Total, social sciences	300	200	.....	40	20	185	.....
Total, psychological sciences	104	84	59	57	77	80	79

NA—not available.
[1] Included in the social sciences.

Source: Federal Funds for Research and Development and other Scientific Activities, series. Fiscal years 1962–66. Fiscal years 1984, 1985, 1986. Federal Funds for Research and Development: Federal Obligations for Research by Obligations for Research by Agency and Detailed Field of Science: Fiscal years 1967–85. p. 64, 90.

From the inception of the agency, social research was basically statistical in nature (generally through the Bureau of the Census) or had consisted of small, unsolicited programs that served essentially informational purposes.

In 1965, the Economic Development Administration (EDA), was founded and the Department of Commerce's social research budget was expanded to assist the EDA in meeting its mission of ". . . de-

termining the causes of unemployment, underemployment, underdevelopment and chronic depression in the various regions of the Nation, and in formulating programs to meet these conditions."[115] Research projects were usually organized around " 'policy-oriented study groups,' through which 'specific projects, undertaken by . . . staff members, contractors or grantees' [were] related to a structured research plan in one of several areas: operational analyses, urban analyses, program evaluation, and studies of the national economic environment." [116] The Department of Commerce's social research budget from 1970 to 1985 fluctuated between $5 and $10 million. The total behavioral and social research budget decreased to an estimated $1,162,000 in 1986. Most funds will go to the Census Bureau and the National Bureau of Standards.

The EDA traditionally has received the bulk of social research funding since its inception, but no funding was requested for EDA social research in the fiscal year 1986. This may be due to the fact that efforts are underway to shift support of some Commerce activities to a self-sustaining basis.

Through various DOC departments, the following products, using social information, have been developed and disseminated: [117]

—The Bureau of the Census publishes several guides, reference works, and materials that explain the nature and use of its data. Also, it issues a number of statistical analyses of which the most well known is *Statistical Abstracts.* Much census data is used in social research studies;

—The Bureau of Economic Analysis publishes several major documents, which are used by researchers: *Survey of Current Business, Weekly Business Statistics, Business Conditions Digest, Defense Indicators,* and *Long Term Economic Growth;*

—The EDA provides technical assistance to states a. d local communities through consultants;

—The National Bureau of Standards "tests hypotheses concerning policies that the [F]ederal Government can use to stimulate technological innovations in the private sector." These experiments are conducted "to find out what results will occur when a policy or practice is changed;"

—The National Fire Prevention and Control Administration (NFPCA), which advances professional development of fire service employees and other individuals involved in fire prevention and control, contracts out the development of course curricula. Courses have been developed on "labor-management relations, administration of public fire education programs, fire safety, and community planning among others;

—The Office of Minority Business Enterprise (OMBE), which develops and coordinates a national program for minority business enterprises and funds various projects to help develop rural businesses. Two such projects dealt with improving marketing by a Chicano cooperative, and selling seafood products by Pacific Northwest Indian tribes.

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[115] United States Government Manual, 1984/85, p. 131.
[116] Lyons, The Uneasy Partnership, op. cit., p. 237.
[117] Abramson, op. cit., p. 93.

11. THE SMITHSONIAN INSTITUTION

The Smithsonian Institution, created in 1846 through an act of Congress, was established to carry out the terms of the will of James Smithson of England, "to found at Washington, . . . an establishment for the increase and diffusion of knowledge among men." [118] Part of its funding comes from congressional appropriations. The Smithsonian "maintains exhibits representative of the arts, American history, aeronautics and astronautics technology, anthropology, geology, and biology; it acquires and preserves for reference and study purposes millions of items of scientific, cultural, historical importance; it conducts research in the natural and physical sciences and in the history of culture, technology, and the arts; and it presents performances of American arts and crafts and supports education programs at all levels and participates in the exchange of scientific information." [119] See Table 32.

TABLE 32.—SMITHSONIAN INSTITUTION OBLIGATIONS FOR TOTAL AND BASIC RESEARCH[1] IN THE BEHAVIORAL AND SOCIAL SCIENCE, BY MAJOR PROGRAM ELEMENT, FISCAL YEARS 1952–86

[In thousands of dollars]

	1952	1953	1954	1955	1956	1957	1958
Total, behavioral and social sciences	NA	81	50	45	50	54	58
Total, social sciences	NA	81	50	45	50	54	58
Total, psychological sciences	NA	(2)	(2)	(2)	(2)	(2)	(2)
	1959	1960	1961	1962	1963	1964	1965
Total, behavioral and social sciences	63	174	413	1,324	1,536	1,834	2,093
Total, social sciences	63	174	413	1,324	1,536	1,834	2,093
Total, psychological sciences							
	1966	1967	1968	1969	1970	1971	1972
Total, behavioral and social sciences	3,250	4,818	5,053	5,647	6,727	5,468	6,207
Total, social sciences	3,250	4,818	5,053	5,647	6,727	5,468	6,207
4Total, psychological sciences							
	1973	1974	1975	1976	1977	1978	1979
Total, behavioral and social sciences	7,944	7,742	7,643	8,089	9,707	12,388	12,523
Total, social sciences	7,944	7,742	7,643	8,089	9,707	12,388	12,523
Total, psychological sciences							
	1980	1981	1982	1983	1984	1985 (est.)	1986 (est.)
Total, behavioral and social sciences	14,613	16,070	20,156	20,191	25,201	30,486	26,650
Total, social sciences	14,613	16,070	20,156	20,191	25,201	30,486	26,650
Total, psychological sciences							

NA—Not available.
[1] All research conducted is basic research.
[2] Included in the social sciences.

Sources: Federal Funds for Research and Development, series. Fiscal years 1962–85.

For FY 1986, the Smithsonian Institution estimates a social sciences research budget of $26.6 million, all of which is used for basic

[118] United States Government Manual, 1984/85, p. 672.
[119] Abramson, op. cit., p. 470.

research. A large portion of the funds are used for anthropology research. Essentially all of the research, which is mission-oriented, is conducted in-house.

Most of the Smithsonian's research on "the human experience" is conducted by the Center for the Study of Man. This Center also prepares educational materials concerning Indians for individuals, schools, and communities. Also, the Institution's Office of Elementary and Secondary Education develops educational materials. In addition, the National Museum Act authorized the Smithsonian to "conduct technical assistance activities, which are aimed at advancing the curatorial profession."[120]

[120] Ibid., 472.Zgw currier—20525—60-422—F. 208-209—A422A 079

VI. NON-FEDERAL FUNDING FOR BEHAVIORAL AND SOCIAL SCIENCE RESEARCH

This section on non-federal funding for behavioral and social sciences research deals with private foundations, State and local Governments, and private industry.

A. The Role of Private Foundations

The material in this section on private foundations is based extensively on a historical review prepared by Marshall Robinson, in 1983.[1] His study showed that foundations have played an important role in the development of the behavioral and social sciences. They provided critical support before the beginning of large Government programs in the late 1950s and early 1960s; their support provided "seed capital" which led to the creation of major behavioral and social research institutes; and they have tended to support innovative and often controversial research topics, interdisciplinary research, and research on social problems topics which Government avoided. Over time the focus of foundation support, according to Robinson, appears to have shifted from funding basic to funding applied research; also about 50 percent of foundation funding for social science research tends to go to support leading research universities and research institutes.

I. FUNDING

a. Social Sciences Research

Prior to 1940, university researchers received the bulk of support from two sources: colleges and universities themselves and foundations. Robinson estimated that in the 1920s and 1930s, the Laura Spellman Rockefeller Memorial and the Rockefeller Foundation together provided approximately $100 million in support for social science research.[2] The Ford Foundation, between the years 1951 and 1956, provided approximately $40 million for the development of the basic sciences of individual behavior and human relations, and for evaluation of existing programs.[3]

Since World War II, private foundations appear to have spent more than $1 billion on social science research.[4] Overall, foundation spending increased following World War II and the social sciences shared in the funds available. Generally, increases in foundation spending were attributed to the emergence of family-sponsored

[1] Robinson, Marshall. Research Support and Intellectual Advances in the Social Sciences. The Role of the Private Foundations. Social Science Research Council Items. v. 37, Sept. 1983: 35–39, and Social Science Research: Shifting Infatuation with a Critical Resource. Foundation News, Sept./Oct. 1983: 58, 59, and 70.
[2] Robinson, The Role of Private Foundations. op. cit. p. 39.
[3] Robinson, Social Science Research: Shifting Infatuation with a Critical Source. op. cit. p. 70.
[4] Robinson, The Role of Private Foundations, op. cit., p. 36.

foundations with living sponsors, which resulted from the need to cope with the high tax rates imposed after the war.

Robinson's collected trend data on support for the social sciences, by source, including foundations. See table 33.

TABLE 33.—ESTIMATED AMOUNT OF FUNDING PROVIDED BY FOUNDATIONS FOR SOCIAL SCIENCE RESEARCH, 1939–1980

[In millions of dollars]

Source of funds	1939	1956	1964	1972	1980
Colleges and universities	12	46	95	160	300
U.S. Government		30	103	307	524
Private foundations	3	21	38	41	41

These data show that in 1956, private foundations provided approximately $21 million for social science research; colleges and universities, $46 million, and the Federal Government, $30 million. Foundation support increased 81 percent to $38 million in 1964. Thereafter, in the late 1960s, Foundation outlays for the social sciences began to stabilize, while, at the same time, Government and university support increased substantially.

The decrease in growth in foundation support may have occurred in part because of the decline in the establishment of new foundations, caused, according to Patricia Read, of the Foundation Center, by an increase in regulation and taxation of foundations and changes in the economic climate.[5]

The decrease in foundation activity accelerated after passage of the 1969 Tax Reform Act, P.L. 91–172. The rigorous provisions of the act adversely affected the grant making programs of private foundations.[6] The General Accounting Office (GAO) reported a 59 percent drop in the establishment of new foundations between 1960 and 1970.[7] In addition to the restrictions imposed by the 1969 Tax Reform Act, the Internal Revenue Service intensified its supervision and scrutiny of foundation performance.

According to Robinson, in 1972 private foundations supported social science research totaling $41 million; $160 million was awarded by colleges and universities, and $307 million by the Federal Government. Thereafter, foundation support for social science research stabilized at $41 million, and, therefore, decreased 44 percent between 1972 and 1980 in terms of constant dollars. By 1980,

[5] Read, Patricia. Foundations Today. Current Facts and Figures on Private Foundations, New York. Foundation Center, 1984. p. 8.

[6] U.S. Congress. Senate. Committee on Finance. Subcommittee on Foundations. The Role of Private Foundations in Today's Society and a Review of the Impact of the Tax Reform Act of 1969 on the Support and Operations of Private Foundations. Oct. 1973. Washington, U.S. Govt. Print. Off., 1973. p. 201. Other restrictions included a proposed 6 percent payment requirement by 1974, phased divesture of types of grantees, more detailed public reporting, restraint on speculative investments, and a 4 percent excise tax on net investment income. (Freeman, David. F. The Handbook on Private Foundations. Council on Foundations, 1981. p. 13.) In 1976 the payout requirements of six percent was modified, to five percent of market value of assests, or net income. In 1978, the four percent excise tax on net investment was reduced to two percent. (Ibid., p. 19.) In 1984, the excise tax was reduced to one percent, if certain criteria could be met. (Edie, John. Foundation News. Foundation Tax Bill Finally Passes. July/Aug. 1984: 64–65.)

[7] Statistical Analysis of the Operation and Activities of Private Foundations. Study by the Staff of the U.S. General Accounting Office. Washington, Jan. 1984. p. 19. (Document GGD–84–38.)

according to data used by Robinson, governmental funding and university funding, derived in large part from the governmental sector, increased to $300 million from colleges and universities, and to $524 million from the Federal Govrnment.

Although foundation support declined relative to other funding sources, the proportion of foundation support allocated to social science research appears to have increased, when compared to total foundation spending. Of the $320 million in grants made by the four largest foundations in 1964 (Carnegie, Ford, Rockefeller, and Sloan), 11 percent ($35.2 million) was for the support of the social sciences.[8] In 1980, the same four foundations, with a significantly reduced level of support at $160 million, allocated 17 percent of their outlays for social science research ($37.2 million).[9]

Robinson's data on foundation support for the social sciences did not go beyond 1980. The Foundation Center has collected data on all foundation support for social science research (which includes behavioral research) since 1980. This shows that Foundation support for these fields increased from $56.2 million (or 28 percent of total foundation expenditures for social science) in the period 1982 to early 1983, to $59.8 million for the period 1983 to early 1984, or about 25 percent of total foundation awards for social science.[10]

b. Total Social Sciences Funding

Data in Table 34 show trends in total foundation support for the social sciences (for capital support, continuing support, endowments, fellowships and scholarships, general or operating support, matching or challenging grants, program development, research, and not specified) for 1980 to 1983. Foundation support increased for these fields from $68 million in 1980, to $132 million in 1983, an increase of 94 percent. This constitutes an increase from 5.7 percent of foundation outlays in 1980, to 7.4 percent in 1983.

TABLE 34.—GENERAL FOUNDATION FUNDING TRENDS, 1980–83

Category	1980		1981		1982		1983	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
Cultural activities	$160,793,884	13.5	$192,559,945	15.3	$208,717,410	14.0	$277,306,737	15.4
Education	266,431,412	22.4	265,851,305	21.1	355,630,604	23.9	286,005,941	16.0
Health	298,918,710	25.1	282,531,602	22.5	312,068,761	20.9	389,520,571	21.7
Religion	28,718,935	2.4	24,678,672	2.0	27,907,365	1.9	37,503,526	2.1
Science	75,466,392	6.4	86,727,544	6.9	96,280,905	6.5	160,917,379	9.0
Social sciences	67,977,493	5.7	75,431,276	6.0	102,362,933	6.9	132,062,310	7.4
Welfare	292,492,972	24.5	329,275,755	26.2	387,278,277	25.9	509,202,800	28.4
Total	1,190,799,798	100.0	1,257,056,099	100.0	1,490,246,255	100.0	1,490,519,313	100.0

Source: Read, Patricia. Foundations Today. Current Facts and Figures on Private Foundations. New York, 1984. p. 14.

[8] Robinson, The Role of Private Foundations op. cit. p. 36.
[9] Idem.
[10] From: Garonzik, Elan. Grants for Social Science Programs. New York, The Foundation Center, 1984, nonpaginated pages, and Grants for Social Science Programs, New York, The Foundation Center, 1985, nonpaginated pages.

2. TYPES OF RESEARCH SUPPORTED BY FOUNDATIONS

Between 1920 and 1950, according to Robinson, foundations emphasized the support of basic research. By 1964, about equal amounts of support were given to basic and applied research and, by 1980, basic research comprised less than 25 percent of the total foundation grant dollars awarded.[11]

Private foundations have been credited with giving the behavioral and social sciences identity as legitimate fields of science, with providing the seed capital to create and sustain core research institutes in these fields,[12] and with supporting some research areas when Government funding decreased due to fiscal as well as ideological factors.

Early foundation activities, according to Robinson, sponsored and supported:

> . . . such critical research organizations as the Brookings Institution in Washington, D.C., the Institute for Government Research (which merged with Brookings in 1928), the National Bureau of Economic Research in Cambridge, and Stanford, the Social Science Research Council in New York, and the Food Research Institute at Stanford University.[13]
>
> . . . There were in this prewar era other foundations helping the social sciences: the General Education Board, the Rosenwald Fund, and—most notably—the Carnegie Corporation [which supported not only the SSRC, but also Gunnar Myrdal's landmark study, *An American Dilemma*, 1944].[14]

The Rockefeller Foundation, in 1929, funded the Research Committee on Recent Social Trends. The Russell Sage Foundation, established in 1907, was considered instrumental in developing social indicators and interdisciplinary programs involving social scientists and other professionals. Prior to World War II, demographics received support from the Scripps Foundation for Research in Population Problems and the Milbank Memorial Fund for assessments of the social and political impact of world population changes. Research support in anthropology came from the Wenner-Gren Foundation prior to receiving increased funding from the National Institutes of Mental Health (NIMH) and the National Science Foundation (NSF).

The Ford Foundation, according to Robinson, should be credited in the 1950s, with giving the term "behavioral sciences" legitimacy as a science and with nurturing key developments in "theory, methodology, and interdisciplinary work." [15] The Ford Foundation also:

> created the Center for Advanced Study in the Behavioral Sciences and it gave new resources to such young institutions as the Institute for Social Research at the University

[11] Robinson, The Role of the Private Foundations, op. cit. p. 38.
[12] For a description of some of these institutes, see appendix A to this chapter.
[13] Robinson, The Role of the Private Foundations, op. cit. p. 35.
[14] Ibid., p. 36.
[15] Ibid., p. 36.

> of Michigan . . .; [the] Laboratory of Social Relations at Harvard; . . . [the] Research Center for Group Dynamics at the University of Michigan (originally at the Massachusetts Institute of Technology); and the Bureau of Applied Social Research at Columbia . . .[16]

Foundations provided initial support for area studies which, according to Robinson," . . . help[ed] break down the national isolation of the American universities." [17] They also played a major role in supporting interdisciplinary research and teaching in such areas as effects of TV violence, and evaluating the effects of public policy, in an attempt to change the "monodisciplinary norms of social science research," to make it more useful.[18]

The diverse efforts of private foundations have provided venture capital for enlarging knowledge, by allocating funds between existing institutions and new programs, between grants for established purposes and grants in new areas. Foundations also have collaborated with government in needed areas of support. Program areas supported by foundations have included crime research, energy and environmental issues, drug abuse, arms control and disarmament and population policy, and effects of technological changes.

3. AWARDS BY DISCIPLINE

As noted above, data from the Foundation Center, in Table 34, provide an overview of the grants awarded by the 101 largest foundations. In 1980, private foundations supported social science programs, including social science research, in the amount of $68.0 million; in 1981, $75.4 million; 1982, $102.4 million, and 1983, $132.1 million. The grantmaking patterns noted in the table are not representative of all private foundations. The information obtained from the 101 foundations covered in this table accounts for 74 percent of the funding but less than two percent of the number of private grantmaking foundations, since funding is concentrated among a few large foundations.[19] A breakdown 1982 to 1983 may be found in table 35. The discipline of political science received the largest amount and number of awards made to the separate social science disciplines. There was a slight increase between 1982 and 1983 in the percentage of award dollars allocated to economics and "general" social science.

TABLE 35.—DISTRIBUTION OF FOUNDATION GRANTS BY SUBJECT CATEGORIES REPORTED IN 1982 AND 1983

Subject	Dollar Value of Grants				Number of Grants			
	1982		1983		1982		1983	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
Social science:								
General	$25,784,944	1.7	$34,693,880	1.9	$323	1.2	$310	1.0
Anthropology	1,094,074	0.1	6,491,069	0.4	30	0.1	85	0.3

[16] Ibid., p. 36–37.
[17] Ibid., p. 37.
[18] Ibid., p. 37.
[19] Read, Foundations Today. op. cit. 1984. p. 14.

TABLE 35.—DISTRIBUTION OF FOUNDATION GRANTS BY SUBJECT CATEGORIES REPORTED IN 1982 AND 1983—Continued

Subject	Dollar Value of Grants				Number of Grants			
	1982		1983		1982		1983	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
Economics	12,964,509	0.9	18,912,147	1.1	316	1.2	394	1.2
Law and legal education	12,484,662	0.8	13,021,894	0.7	273	1.0	275	0.8
Political science	50,034,744	3.4	58,943,320	3.3	762	2.8	1,161	3.6
Total social science	102,362,933	6.9	132,062,310	7.4	1,704	6.3	2,225	6.9

Source: Garonzik, Grants for Social Science Programs, 1984.

4. ILLUSTRATIONS OF SPECIFIC FOUNDATION AWARDS FOR THE SOCIAL SCIENCES

In his short review of foundation social science research support activities from World War II to the early 1980s, Robinson observed that "social science research has continued to find favor among a small group of large foundations including the 'big four' in social science—Carnegie, Ford, Rockefeller, and Sloan." [20]

Current comprehensive data on specific foundations supporting social science programs is detailed in a publication of the Foundation Center, called *Grants for Social Science Programs.*[21] The publication lists 3,141 grants, each totalling more than $5,000, made by 305 foundations "mostly in 1982 and early 1983." The total amount awarded by all of the foundations for social science for this approximately 1.5 year period was $202.3 million.[22] About 30 percent of the awards were for research. These data cannot be compared with other data in this chapter since they were collected differently. The subject distribution of awards is shown below in Table 36.

TABLE 36.—FOUNDATION GRANTS FOR SOCIAL SCIENCE PROGRAMS, 1982–EARLY 1983

Subject	Amount	Number
Adult or continuing education	$12,600	1
Anthropology or sociology	6,491,069	85
Art or architecture	336,877	8
Business or employment	10,995,913	295
Community affairs	637,996	24
Consumer interests	33,000	2
Crime or law enforcement	291,500	7
Culture, general	3,977,500	19
Economics	16,308,018	344
Education, general	1,838,882	28
Elementary or secondary education	532,904	17
Environment or energy	1,951,054	55
Equal rights (including legal services)	1,968,083	47
Health, general	3,557,000	12
Higher education	2,137,862	28
History	5,773,106	97
Language or literature	798,412	7

[20] Garonzik, 1984. op. cit.
[21] Idem.
[22] Robinson, Social Science Research: Shifting Infatuation with A Critical Resource. op. cit. p. 59.

TABLE 36.—FOUNDATION GRANTS FOR SOCIAL SCIENCE PROGRAMS, 1982–EARLY 1983—Continued

Subject	Amount	Number
Law or legal education	12,543,442	267
Life sciences	3,945,732	30
Media or communications	7,772,627	95
Mental health	2,916,303	42
Music	192,828	8
Physical sciences	120,888	3
Political science	58,825,920	1,153
Public health	3,311,438	33
Recreation	604,000	7
Religion, general	1,248,343	14
Rural development	591,402	11
Science, general	823,000	9
Social sciences, general	34,716,380	313
Technology	14,427,450	20
Theater or dance	13,500	2
Urban development	843,782	26
Vocational education	5,000	1
Welfare, general	790,010	31
Total	202,333,811	3,141

Source: Granozik, Elan. Grants for Social Science Programs. New York, 1984.

Table 37 contains a listing, excerpted from data provided by the Foundation Center, of all foundations that made awards for social science in amounts greater than $1 million in 1982 to early 1983. Foundations falling into this category provided 61.6 percent of foundation support for social science programs. Of these 39 foundations, 25 (approximately 64 percent), had expenditures in the $1 and $2 million range. The rest had larger expenditures.

TABLE 37.—FOUNDATIONS THAT AWARDED FUNDS FOR SOCIAL SCIENCE IN AMOUNTS GREATER THAN $1 MILLION IN 1982 AND EARLY 1983

Foundation	Amount	Number
Ford Foundation	$37,307,741	330
System Development Foundation	12,699,245	5
Pew Memorial Trust	11,558,700	28
Hewlett (William and Flora) Foundation	10,874,500	40
Mellon (Andrew W.) Foundation	7,946,000	36
Pew (J. Howard) Freedom Trust	6,458,500	25
Sloan (Alfred P.) Foundation	6,622,900	62
Grant (William T.) Foundation	4,741,966	59
Scaife (Sarah) Foundation	4,558,200	36
Rockefeller Foundation	4,491,515	101
Lilly Endowment	4,037,940	18
MacArthur (John D. and Catherine T.)	3,783,939	16
Starr Foundation	3,730,845	18
Carnegie Corporation of New York	3,019,256	27
Spencer Foundation	2,866,047	42
Bush Foundation	2,845,738	8
Keck (W.M.) Foundation	2,705,000	7
Kellogg (John L. and Helen) Foundation	2,500,000	1
Kresge Foundation	2,400,000	8
Olin Foundation	2,200,000	1
Revson (Charles H.) Foundation	2,084,240	20
Atlantic Richfield Foundation	1,969,558	65
Richardson (Smith) Foundation	1,813,214	44
Commonwealth Fund	1,753,093	14

TABLE 37.—FOUNDATIONS THAT AWARDED FUNDS FOR SOCIAL SCIENCE IN AMOUNTS GREATER THAN $1 MILLION IN 1982 AND EARLY 1983—Continued

Foundation	Amount	Number
Cleveland Foundation	1,690,476	2
Field Foundation	1,556,750	65
Olin (John M.) Foundation	1,453,843	7
Exxon Education Foundation	1,441,148	48
Sage (Russell) Foundation	1,277,987	21
Rockefeller Brothers Fund	1,215,140	24
Kellog (W.K. Foundation)	1,210,603	7
United States—Japan Foundation	1,165,587	25
Dow (Herbert H. and Grace A.) Foundation	1,149,988	1
Aetna Life & Casualty Foundation	1,145,940	40
Amoco Foundation	1,110,940	56
Markle (John and Mary R.) Foundation	1,098,474	14
Foundation for Child Development	1,036,056	19
Houston Endowment	1,027,050	20
Tinker Foundation	1,017,000	50
Total	124,697,294	1,410

The list shows that, in 1982 to early 1983, the Ford Foundation provided the largest dollar amount of support, approximately $37.3 million, for 330 grants. The 15 largest recipients for social science for the same period are listed in Table 38. The single largest award for social sciences was provided by System Development Foundation, at $10 million.[23]

TABLE 38.—TOP 15 RECIPIENTS BY HIGHEST SINGLE FOUNDATION GRANT AMOUNT 1982–EARLY 1983

	Recipient name	Donor	Grant amount
1.	Rand Corp	System Development Foundation, California	$10,000,000
2.	Social Science Research Council	Ford Foundation, New York	4,500,000
3.	Boston University, Health Policy Institute	Pew Memorial Trust, Pennsylvania	3,000,000
4.	American Council of Learned Societies	Ford Foundation, New York	2,500,000
5.	University of Notre Dame	Kellog (John L. and Helen) Foundation, Illinois	2,500,000
6.	Albion College	Olin Foundation, New York	2,200,000
7.	University of California	System Development Foundation California	2,124,224
8.	Committee on Institutional Cooperation	Hewlett (William and Flora) Foundation, California	2,012,500
9.	Joint Center for Political Studies	Lilly Endowment, Indiana	1,561,260
10.	Joint Center for Political Studies	Ford Foundation, New York	1,544,500
11.	American Enterprise Institute for Public Policy Institute.	Pew (J. Howard) Freedom Trust Pennsylvania	1,500,000
12.	American Philosophical Society	Pew Memorial Trust, Pennsylvania	1,500,000
13.	Founding Fathers Papers	Pew (J. Howard) Freedom Trust, Pennsylvania	1,500,000
14.	Massachusetts Institute of Technology	Pew Memorial Trust, Pennsylvania	1,500,000
15.	University of Michigan	Dow (Herbert H. and Grace A.) Foundation, Michigan.	1,149,988

Source: Garonzik, Elan. Grant for Social Science Programs. New York, 1984.

5. GRANTS BY TYPE OF PERFORMER

Robinson gave a "sketchy" estimate that "a listing of the recipients of foundation grants shows not surprisingly, that the leading

[23] Extracted from: Garonzik, op. cit. 1984.

research universities and research institutions get the greatest share—about 50 percent of the grants." [24] This is not surprising since the pattern of distribution mirrors the distribution patterns of Federal funding for research.

Research institutes received about 25 percent of the total awards for social science in the data cited above, for the period 1982 to early 1983.[25] About 43 percent went to college and university researchers. The distribution patterns were about the same for grants for social sciences awarded by foundations over the period 1983 to early 1984.[26]

6. LIKELY FUTURE FUNDING TRENDS FOR SOCIAL RESEARCH

During hearings on behavioral and social sciences held by the Task Force on Science Policy in 1985, testimony dealing with future funding trends for social research was heard from two foundation officials, Francis X. Sutton, Ford Foundation and Social Science Research Council, and Albert Rees, Sloan Foundation. They testified, basically, that foundation funding for these research areas will continue to be constrained in the future and that funding will go to a few priority topics. Diminished resources will contribute to funding constraints. But another important factor according to Sutton is the public's and foundation trustees' skepticism about "surrender to the authority of experts . . . in matters that touch our intimate lives or seem to lie within the realms of practical judgment and experience." Sutton also was reported to have attributed funding restraint to "a growing general skepticism toward social institutions, the possibility for rational amelioration of societal problems and the automatic usefulness of disciplinary knowledge in practical affairs." [27]

B. State and Local Government Social and Behavioral Sciences R&D

In 1977, the Government Division, Bureau of the Census, Department of Commerce, under contract to the NSF, surveyed and collected R&D data on a limited number of State and local governments.[28] The survey was limited to 1,599 State and local governments having a 1970 population of 100,000 or more; and the 300 largest district governments in terms of 1972 employment.[29] The survey does not include the activities of State universities, colleges and their affiliated schools. This particular study was a continuation of a now discontinued series of NSF-sponsored studies on R&D activities that began in 1966 for local governments and 1964 for State governments. Table 39 details the size of State agency expenditures for social and behavioral sciences R&D activities for selected years. The bulk of support for all the years surveyed went to

[24] Garonzik, 1984 and 1985. op. cit., passim
[25] Robinson, Social Science Research: Shifting Infatuation with A Critical Resource. op. cit. p. 59–70.
[26] Idem.
[27] Special Report: House Task Force Holds Social Science Hearings. COSSA Washington Update, v. IV. Oct. 1985: 6.
[28] U.S. National Science Foundation. Research and Development in State and Local Governmentr, Fiscal Years 1977. U.S. Govt. Print. Off., 1979. (NSF 79-327) 60 p.
[29] Ibid., p. 28.

social sciences research, which constituted about 88 percent of the total funds for behavioral and social R&D in 1977. In 1977 total R&D expenditures for these disciplines was $88.9 million, an increase of 653 percent since 1964. In 1964 support for social and behavioral sciences R&D constituted 16.4 percent of the total R&D budget; this percentage increased to 24.8 percent in 1977. The most dramatic increase occurred between the years 1968 when support for the social and behavioral sciences was 19.7 percent of total R&D expenditures, to 1972, when support constituted approximately one-third of R&D funds (31.5 percent).

TABLE 39.—STATE AGENCY EXPENDITURES FOR RESEARCH AND DEVELOPMENT FOR SOCIAL AND BEHAVIORAL SCIENCES, SELECTED YEARS

[In thousands of dollars]

Field of science	1964	1965	1967	1968	1972	1973	1977
Social sciences	9,044	13,235	16,479	20,351	58,008	67,145	78,489
Psychological sciences	2,794	3,476	7,745	10,189	16,022	18,655	10,315
Total	11,838	16,711	24,224	30,540	74,030	85,800	88,804
Total all fields	72,002	87,886	131,187	154,724	234,923	263,778	358,473

Source: Research and Development in State and Local Governments Fiscal Year 1977. National Science Foundation (NSF 79-327). p. 7.

The increased support for these sciences at the State and local level paralleled the increases for support at the Federal level, although the increase at the Federal level was 200 percent.

Since 1977, it might be inferred that State funding for behavioral and social research has followed patterns of Federal funding. But it may be that State funding increased to compensate for fluctuations and some decreases in Federal funding for these fields. There is no data to describe actual trends. The National Science Foundation no longer collects or compiles definitive data on the R&D activities of State and local governments, particularly support given by field of science, according to Gerard R. Glasser, Jr., director, Government Studies Group, National Science Foundation.

Between the years 1976 and 1983, employment of behavioral and social scientists at the State level increased by seven percent, from 25,600 in 1976 to 27,400 in 1983.[30] Whether the increase in employment of social and behavioral scientists at the State government level corresponds with an increase in support for these sciences is not known.

C. Behavioral and Social Science Research in Industry

No statistical information has been compiled to describe the amount of support for behavioral and social science research that industry provides.

However, as indicated in chapter VIII on manpower trends, increasing numbers of behavioral and social scientists are being employed in industry. Two major types of industrial users may be identified. One consists of the "social science/survey research/polling/evaluation industry." This is comprised largely of social scientists, who do contract work for Federal, State and local govern-

[30] Science and Engineering Personnel: A National Overview. NSF 85-302. op. cit. p. 95.

ments, or who conduct public opinion polls or other kinds of survey research for a variety of clients.

According to Otto Larsen, Senior Associate, Social and Behavioral Sciences, National Science Foundation, the survey research industry spends approximately $4 billion annually.[31] The National Science Board of the National Science Foundation ". . . estimated that some 2,000 survey research organizations conduct surveys and there are many times that number of businesses that conduct their own studies." [32] Larsen described this kind of work as follows:

> Reliable information and sound basic knowledge does have tangible consequences. Past investment in the social and behavioral sciences have led to and improved technologies of considerable dollar value. Multi-million dollar industries have emerged in the United States from findings, and discoveries traceable to the social and behavioral sciences. Profit-oriented private economy adapts and applies these products, just as it purchases electronics or medicines which started as physical or biological science discoveries. Important enterprises are now built around economic forecasting, demographic projections, political polling and survey research, standardized educational, aptitude, and intelligence testing, personnel selection and management counseling, language demographic projections, political polling and survey instruction, psychotherapy, cost benefit analysis, human engineering system design, consumer research, marketing analysis, symbols and image design, and information dissemination. Whole industries and professions such as advertising, public relations, and mass media audience measurement services, draw continuously on information, techniques and measures developed in social and behavioral research.
>
> Technologies are also exported (e.g. Gallup International). They also attract foreign investments as thousands of students come from abroad for advanced training in econometrics, linguistics, demography, survey methodology, psychometric testing, management science, etc.[33]

Abt Associates, Inc. a consulting firm with a revenue level of $20 million in 1985, is an example of a profitmaking social science research firm. It is headquartered in Cambridge, Massachusetts. Initially designed to conduct social and economic, public policy, and evaluation research, it has, in the course of 20 years, diversified into banking, transportation, health care, economic development, education, the environment, legal affairs, labor economics, and national defense. Clark C. Abt, founder of Abt Associates, stated in the *Twentieth Annual Report,* that diversification was partly due to shrinkage in the Federal research market. Considerable work is now done for domestic and international businesses, industry, and State and local governments. The firm played a role in the found-

[31] Otto Larsen, Interview, Dec. 1984.
[32] Only One Science. Twelth Annual Report on the National Science Board. National Science Foundation. Washington, U.S. Govt. Print. Off., 1981. p. 82.
[33] Otto Larsen, 1981. op. cit. p. 3.

ing of the Council for Applied Research (now merged with the Evaluation Research Society).[34]

Major nonprofit institutes that conduct a substantial amount of social science research, often with Government funding include:

> the American Enterprise Institute (Washington, D.C.); the Hoover Institute (Stanford, California); the National Bureau of Economic Research (Cambridge, Massachusetts); the Rand Corporation (Santa Monica, California); and the Research Triangle Institute (Research Park, North Carolina).[35]

The other major kind of behavioral and social science research conducted in industry is secondary research in industrial firms of all sorts, including high technology, communications, automotive, and food. In these areas social scientists are increasingly being employed ". . . in industrial management, personnel evaluation, environmental-impact studies, and consumer surveys." [36] Behavioral and social scientists also work for or receive subcontracts from the large defense contractors for instance working on remote sensing and defense mapping. An article in *U.S. News and World Report* noted that in the Far West, a utility hired an anthropologist to dicker with Indians for placement of power lines across their lands."[37]

A few other examples of how industry uses or supports behavioral and social scientists are given next. Bell Laboratories is an example of industry employing social and behavioral scientists, mainly industrial/organizational psychologists, who use behavioral and social science knowledge. Psychologists are diversified within Bell Laboratories and work in such departments as: Human Resources Studies; Management Employment; Management Staffing, Development, and Employment Administration. Wayne F. Cascio, Professor in the College of Business Administration at the University of Colorado, Denver, described one aspect of the work of industrial/organizational psychologists as "behavior costing."

> . . . [W]e are placing dollar values on the economic consequences of employee behaviors such as absenteeism and turnover. It is these economic consequences that lead to large costs (or cost savings) for firms, and this approach dovetails nicely with the kinds of activities that many i/o psychologists are involved in.[38]

Industrial/organizational psychology, according to Georgine Pion, administrative officer for human resources, American Psychological Association (APA), is one of the three main areas of diversification for psychologists.[39] The other main areas cited by Pion were

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[34] Twentieth Annual Report, 1965–1985. Cambridge, Mass. Abt Associates, Inc., 1985. 36 p.
[35] The Five Year Outlook on Science and Technology. Source Materials, v. 2, 1981. op. cit. p. 550.
[36] Jones, George E. with Carey M. English. Social Sciences: Why Doubts Are Spreading Now. U.S. News and World Report, May 31, 1982. 71.
[37] Idem.
[38] Cascio, Wayne F. Contributions of the I/O Psychologists to the Bottom Line. Industrial-Organizational Psychologists, v. 21, no. 3 May 1984; 22
[39] Georgine Pion. American Psychological Association, Telephone Interview, July 18, 1985.

cognitive science and health psychology. Two additional areas, consumer psychology and engineering psychology, are also attracting additional psychologists. The division of Industrial and Organizational Psychology (Division 14) of the APA had 2,200 members in 1981, and 2,800 APA members designated this as their major field of practice.[40] Pion reported that membership in this Division increased to 2,496 in 1985.

During hearings held by the Task Force on Science Policy in September 1985, several witnesses discussed the history of development in industrial organization psychology and their cost-saving contributions to industrial balance sheets. Douglas W. Bray singled out two developments, the "assessment center method" (which uses behavioral simulations on candidates for particular assignments) and "behavioral modeling training" (to improve managerial skills)." [41]

Pharmaceutical firms have also supported the research of psychopharmacologists. Examples include Pfizer,[42] G.P. Searle, Burroughs-Wellcome, Merck and Company, and Hoechst-Roussell Pharmaceuticals, Inc.[43] There are also examples of published work on artificial intelligence [44] and in human factors that was sponsored by industry.[45]

The Human Sciences and Environment Department of the General Motors Research Laboratories uses social scientists and social science knowledge to anticipate and evaluate technology and to assess the impact of its processes and products on the environment. Research activities in this department range from ergonomics (increasing the efficiency of the man-machine interface) and passenger protection system designs, to risk-taking behaviors and opinion surveys on paint preferences.[46] Walter Albers of the GM research laboratory testified during the hearings on the behavioral and social research held by the Task Force on Science Policy that the number and subjects for inquiry by behavorial and social scientists increased significantly (his department grew fourfold in twelve years). Topics of study now include social change, community noise, risk assessment, and driver behavior.[47]

General Motors also has a large economics staff, headed by Marina Whitman, an economist, formerly with the Council of Eco-

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[40] Howard, Ann. Who are the Industrial/Organizational Psychologists? An Analysis of Data from the 1981 APA Directory. Report prepared for the Executive Committee on Division 14. American Psychological Association, Jan. 1982. p. 22.

[41] Testimony of Douglas W. Bray before Task Force on Science Policy. House Committee on Science and Technology, Sept. 18, 1985.

[42] Psychological studies supported by Pfizer include several papers present at a symposium by psychologists—Jim Smith, Linda Pykstra, and Barbann Lal. (Journal of Clinical Pharmacology, v. 21, no. 8 and 9 (supplement). 1981.

[43] Information supplied by American Psychological Association, Dec. 1985.

[44] Newell, Allen, J.E. Laird, and P.S. Rosenbloom. Soar: An architecture for general intelligence, Technical Report. Computer Science Department, Carneigie Mellon University, 1985. (sponsored by Xerox). Sternberg, Saul. Stage Models of Mental Processing and the Additive-Factor Method. The Behavioral and Brain Sciences, 1984. p. 7, 82-84. (sponsored by AT&T).

[45] Harris, Douglas, Presidential Address: Human Factors Success Stories, Proceedings of the Human Factors Society, 28 Annual Meeting, 1984. (Cities research sponsored such corporations such as IBM, Hewlett-Packard, McDonnell-Douglas and Eastman Kodak.)

[46] Brus, John and Shirley Warth. Preparing for Tomorrow. General Motors Research Laboratories. Warren, MI., 1985. 32 p.

[47] See also Holden, Constance. Social Scientists Make Case to Congress. Science, v. 230, Oct. 4, 1985.

nomic Advisors. The staff plays a role in forecasting, policy analysis, and planning functions.[48]

D. Concluding Comments

Foundations, State and local governments, and industry are playing important roles in the support of behavioral and social science research. However, their levels of support and objectives are limited. Foundations have supported crucial research institutes and individual researchers doing social policy-oriented research which may be deemed too controversial or innovative for government. However, foundations appear to lack funds and programs to fill gaps in funding resulting from Government cutbacks. It appears that about 50 percent of foundation support goes to leading research universities and institutes as performers. There is little information available on the current support levels for behavorial and social science research in State and local governments and in industry. However, information presented in this chapter and in Chapter VIII, on personnel trends, shows that industry's demand for skills in these disciplines is increasing. The Federal Government has played a critical role in supporting these disciplines—across all fields, and to all kinds of performers. Its role appears to have been far more crucial, so far at least since World War II, than the role of foundations or industry. Better data regarding State and industrial support and use of these fields are needed to develop future policy guidelines regarding the appropriate relative support roles of these sectors.

The Economic Recovery Tax Act of 1981, P.L. 97-34, provided tax credits to corporations for most kinds of new research. The intention of the Economic Recovery Tax Act was to increase technological innovation and productivity by stimulating private sector research and development. However, this act explicitly excluded social science research from qualifying for such R&D tax credits. With the exclusion of the social sciences as "qualified research," the tax credit may overlook an area of research that may have the potential to enhance industrial productivity and to promote technological growth. Some behavioral and social scientists have asked the Congress to consider the pros and cons of amending the Economic Recovery Tax Act to include behavioral and social science research. The R&D provisions of the act expired in December 1985. The full act is up for renewal in 1986.

[48] Whiteman, Marina, N. Economics From Three Perspectives. Business Economics, Jan. 1983: 20-24.

APPENDIX A [1]

National Organizations and Research Institutes

NATIONAL ORGANIZATIONS

There is no official umbrella organization for the social sciences in the United States, but each discipline has a national professional association to which most scholars in the field belong. These associations sponsor annual meetings and the publication of journals, maintain professional and ethical standards, and publicize grant and fellowship opportunities. Only rarely do they become directly involved in research (beyond the publication of results); instead, they focus on the professional lives of their members.

In contrast to these professional associations are three national organizations that are directly concerned with the research of social scientists.

The Social Science Research Council (SSRC), founded in 1923, was created by representatives of the seven major social science disciplines for the explicit purpose of advancing research. Governed by a board that is partly elected by the professional associations, and administered by a president and a staff of social scientists, the Council seeks to advance research in the social sciences in a wide variety of ways: it appoints committees of scholars to set priorities and make plans for critical, generally interdisciplinary areas of social science research; it seeks to improve research capabilities through training institutes and fellowship programs; it works to support individual research through the provision of post-doctoral grants; it convenes research conferences that are often interdisciplinary and international; and it sponsors the preparation of books and other research publications that often result from these activities.

The Assembly of Behavioral and Social Sciences (ABASS) is one of eight major program units of the National Research Council, the principal operating agency of the National Academy of Sciences. The Assembly provides the primary forum for the behavioral and social sciences in all National Research Council endeavors and is actively involved in efforts to relate the behavioral and social sciences to public policy. Governed by a board of social scientists and administered by an executive director and a professional staff, its work is carried out largely through committees of scholars. Generally, its activities are initiated not by scholars but by officials of the federal government, for it is on the government's behalf that the National Research Council is chartered to conduct and sponsor research.

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[1] The Five-Year Outlook op. cit.

The Center for Advanced Study in the Behavioral Sciences, founded in 1954 with funds from the Ford Foundation, provides about 50 scholars a year with the quiet, the library resources, and the freedom from teaching and administrative responsibilities that are conducive to research and writing. Typically, Fellows at the Center either plan their next research project or complete a book about their latest one. In recent years, however, the Center has taken a more active role in planning and guiding new areas of research, primarily by sponsoring conferences and workshops. It is considered an honor to be invited to be a Fellow at the Center, which remains both a symbolic focus of high quality research and a locale where this research is often generated.

RESEARCH INSTITUTES

There are hundreds of university-based social research institutes in the United States. Most are small, serving the research interests of a relatively few faculty members and a larger number of graduate students; a few dozen are more extensive, with specialized programs. Of these, two are outstanding both in size and in the quality of research they produce: the Institute for Social Research at the University of Michigan, and the National Opinion Research Center at the University of Chicago.

The Institute for Social Research (ISR) at the University of Michigan was founded in 1946. It has since become the nation's largest and most diversified social science institution situated on a university campus. The Institute consists of a number of subsidiary organizations; the largest and best known of which is the Survey Research Center. The Center, in turn, is widely known for it panel studies of voters in national elections, its surveys of consumer expectations, and its research into large-scale organizations.

The National Opinion Research Center (NORC) was founded in 1941 at the University of Denver, where it established a nationwide staff of trained interviewers. In 1947, NORC moved to the University of Chicago, where it has focused on methodological development and surveys conducted on behalf of a wide variety of private and public sponsors. Among its projects, it currently administers the General Social Survey, which is a periodic attempt to obtain standardized information about the general public.

Among the research centers and institutes affiliated with universities, the centers for the study of foreign areas deserve special note. Where there are concentrations of faculty with expertise of a particular geographic region, there is often an administrative unit such as an institute or center. More often than not, the unit is a Title VI Center, i.e., it receives federal funds authorized under Title VI of the National Defense Education Act of 1958. The importance of these centers extends beyond the administrative support they provide for scholars: they combine the functions of teaching and research—to the improvement of each—and they provide an environment for interdisciplinary and collaborative teaching and research.

VII. STUDIES OF THE RELATIONSHIPS BETWEEN THE GOVERNMENT AND THE BEHAVIORAL AND SOCIAL SCIENCES

A. Introduction

This chapter addresses that part of the Task Force request for "a review of past studies in this field [of the behavioral and social sciences], the recommendations they contain, and their impact." This chapter discusses only major reports—usually those that are multidisciplinary in nature. An attempt has been made to discuss the impact of the recommendations in these reports.[1] However, it is very difficult to identify whether or not subsequent decisions were influenced by the recommendations made. In some cases the process itself of convening a commission, studying an issue, and reporting on it, served the function of generating consensus among participants. Therefore, the report-writing exercise itself constituted an integral part of the decisionmaking process, since attitudes and decisions may have changed.

The reports that are surveyed next are discussed chronologically and thematically.

B. Reports During the 1950s and the Early 1960s: Legitimating the Scientific Status of the Behavioral and Social Sciences

There were several behavioral and social science policy reports during the late 1950s and early 1960s, focussing on issues relating to goverance for, funding of, and use of the behavioral and social sciences. These reports reflected optimism regarding the potential utility of these sciences for policymaking and also an awareness of the need for better goverance of these burgeoning fields of Federal support.

Two basic kinds of advisory reports were prepared on the behavioral and social sciences during this period. They focussed on legitimizing these disciplines as sciences and giving them the same status as the natural and physical sciences—as far as support and attention by science advisory mechanisms.

In 1958, a group of behavioral scientists, under the direction of James Grier Miller, University of Michigan, released a report enti-

[1] Some of this discussion is based on: Lazarsfeld, Paul F. and Jeffrey G. Reitz, in collaboration with Ann K. Pasanella. An Introduction to Applied Sociology. New York, Elsevier, 1975. p. 41-24, on: Knezo, Genevieve J. Government Science Policy: Some Current Issues on Federal Support and Use of the Behavioral and Social Sciences. *In* U.S. Congress. House. Committee on Science and Astronautics. Federal Policy, Plans, and Organization for Science and Technology, Part II. Hearings. June and July 1974. 93rd Cong. 2nd sess. Washington, U.S. Govt. Print. Off., 1974. p. 517-568, and on: Orlans, Harold. Social Science Research Policies in the United States, p. 23, as cited in Knezo, Government Science Policy, op. cit., Orlans, Harold. Contracting for Knowledge. San Francisco, Jossey-Bass Publishers, 1983, as cited in Knezo, Government Science Policy, op. cit., and Orlans, Harold. Criteria of Choice in Social Science Research. Minerva, v. 10, Oct. 1972. p. 579, as cited by Knezo, Government Science Policy, op. cit.

tled *National Support for Behavioral Science.*[2] It had been prepared in response to questions expressed by Vice President Nixon about whether the United States was lagging behind the Soviet Union in the development of behavioral science. The report recommended that behavioral scientists should participate in the work of the Office of the Assistant to the President for Science and Technology and also that funding should be increased for behavioral science in various agencies. One result of the report was a series of presentations made by behavioral scientists to the President's Science Advisory Committee.

During the early 1960s, the President's Science Advisory Committee (PSAC) began to debate the issue of whether the social and behavioral sciences were sciences in the same sense as the hard sciences, and, if so, whether they deserved more attention and support. This debate undoubtedly was motivated by the lingering doubts as to the extent to which the National Science Foundation (NSF) should support behavioral and social sciences research, under the permissive, as opposed to explicit, mandate given to NSF in 1950. (For details on this history, see Chapter II in this report.) Jerome Wiesner, the President's science advisor, appointed a subpanel of the life sciences panel of PSAC to study the issue. Their report, *Strengthening the Behavioral Sciences* was released in 1962.[3] The Weisner report, as it is commonly known, stressed the similarities between the behavioral sciences and social sciences, on the one hand, and the natural and physical sciences, on the other, concerning methodology of mathematical models, and quantification in some aspects of sociology and psychology.

Several observers of the social science/Federal Government relationship, including Lazarsfeld, Reitz, and Orlans,[4] concluded that this approach helped make the "social science respectable," and helped rationalize recommendations made in the report for public support for training, support of basic research, large-scale data collection, and the "use of social science by 'agencies with action missions.'" The report is notable also since it included, for the first time, the notion that the Federal Government might conduct social experiments before enacting social legislation. (It should be pointed out that the circumstances of the time, notably the perceived need for social policy and evaluation information for the expanding Great Society programs of the 1960s, probably gave more credibility to these fields of science.)

Other discernable impacts, according to Orlans, were: "the enlarged social science program of the National Science Foundation and a few specific grants subsequently awarded by the Foundation for the mathematical training of social scientists, and for certain

[2] Miller, James G., ed. National Support for Behavioral Science. Ford Foundation, Feb. 1958. p. 24.

[3] U.S. President's Science Advisory Committee. Life Sciences Panel. Strengthening the Behavioral Sciences. Washington, D.C., 1962. p. 19.

[4] U.S. Congress. House. Committee on Government Operations. Subcommittee on Research and Technical Program. The Use of Social Research in Federal Domestic Programs. A Staff Study, 90th Cong., 1st sess., Apr. 1967. Washington, U.S. Govt. Print. Off., 1967. Four Volumes: Part I. Federally Financed Social Research, Expenditures, Status, and Objectives; Part II, The Adequacy and Usefulness of Federally Financed Research on Major National Social Problems; Part III, the Relation of Private Social Scientists to Federal Programs on National Social Problems; and Part IV: Current Issues in the Administration of Federal Social Research. See vol. 1, p. 7.

data series studies conducted by the Survey Research Center and the National Opinion Research Center." Lazarsfeld and Reitz concluded that:

> The report . . . certainly made the National Science Foundation and the regular government agencies more receptive to the idea of funding social science projects. This in turn led to the expansion of empirical social research in universities and the organization of extramural research agencies eligible for public funding.[5]

". . . Broadening of the composition of the social science division of the National Research Council" to include representatives of economics, sociology, and political science (whereas before its only behavioral and social science members represented anthropology and psychology) was also an important consequence of the Weisner report, according to Orlans.[6]

A second major report of the Executive Office of the President was the study *Privacy and the Behavioral Sciences*, issued by the Office of Science and Technology in 1962.[7] It emphasized the need for voluntary participation and informed consent of subjects in behavioral science research, recommended that institutions supporting such research develop their own methods for institutional review, and that universities and associations emphasize the ethical aspects of behavioral research.

Orlans described several other early government reports assessing aspects of the behavioral and social sciences in a study conducted for the Congress.[8] These included two reports by the Federal Council on Science and Technology in 1960 and 1964 which, according to Orlans, stressed the importance of supporting social research, but also the difficulty of applying it to policy;[9] a study by the House Subcommittee on Science, Research, and Development in 1964, consisting of replies of officials from major R&D agencies to questions about the balance of government support between the natural and social sciences, which showed considerable skepticism about supporting social sciences;[10] a 1965 report of the House Committee on Government Operations, which concluded, according to Orlans, "that 'massively increased support for scholarship and for instruction in the humanities and the social sciences . . . be accepted as an important national goal,' " but avoided ". . . any judgment about exactly what part the Federal Government should play in achieving this goal . . . ;"[11] and excerpts from a U.S. submission

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[5] Lazarfeld and Reitz, op. cit., p. 15.

[6] Government and Science, Distribution of Federal Research Funds, Indirect Costs re Federal Grants, hearings before the Subcommittee on Science, Research, and Development of the House Committee on Science and Astronautics, 88th Cong., 2nd sess., 1964, no. 4, as described in The Use of Social Research in Federal Domestic Programs, vol. 1, op. cit, p. 108–116.

[7] Orlans, Harold. Introduction. In The Use of Research in Federal Domestic Programs. Part I, op. cit., p. 7–8.

[8] Privacy and Behavioral Research. By Office of Science and Technology Policy. Executive Office of the President, Feb. 1967, 30 p.

[9] Orlans, Harold. Introduction, in The Use of Social Research in Federal Domestic Programs, vol. 1, op. cit., p. 8–9.

[10] *In* The Role of the Federal Council for Science and Technology, Report for 1963 and 1964, Office of Science and Technology, Executive Office of the President, 1965, as described in The Use of Social Research in Federal Domestic Programs, vol. 1, op. cit., p. 107–108.

[11] Orlans p. 9 discussing the report "Federal Neglect of the Social Sciences," *In* Conflicts Between the Federal Research Programs and the Nation's Goals for Higher Education. Eighteenth

Continued

to an inquiry by the Organization for Economic Cooperation and Development, (OECD) about the size of the U.S. social science community and the use of social information in decisionmaking, which recommended that social scientists be included on the President's Science Advisory Committee.[12]

C. A Congressional Inquiry

Behavioral and social science policy reports during the second half of the 1960s focussed on issues in the utilization of knowledge in policymaking, ethical problems in the conduct by Americans of foreign area social, economic and political research abroad for defense agencies, and levels of support appropriate to sustain the scientific potential and policy utility of these disciplines.

In 1967, the Research and Technical Programs Subcommittee, the Reuss Subcommittee named after Subcommittee chairman Henry Reuss, of the House Committee on Government Operations, undertook a series of background investigations on the subject of federally supported extramural social research related to domestic programs in anticipation of holding hearings on priorities and organization for federally sponsored social research. The resulting four-volume set of publications presented considerable data on the size and costs of the enterprise, surveyed social scientists working inside and outside of government to obtain information on the status and priorities of these disciplines, and printed collections of previously separately published and especially commissioned papers. The work was directed by Harold Orlans, a social scientist and public administration scholar.[13]

Orlans concluded that social scientists were eager recipients of Federal funding, but were not eager to determine and choose priorities, especially priorities for Federal funding—an attitude which, he reported, prevented the Subcommittee from meeting its objectives of holding hearings on the subject and developing a policy for funding priorities. The Subcommittee survey revealed, Orlans reported, that

> The policies which academic social scientists have advocated can be summed up in one word, more: more money for research and especially for basic research; more money for training; more block grants which members of the academic staff may use for research of their own choice; more freedom from government application, accounting, and reporting requirements; a more attentive and respectful gov-

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Report by the Committee on Government Operations, 89th Cong., 1st sess., H. Rept. no. 1158, Oct. 13, 1965, p. 55–57, *In* The Use of Social Research in Federal Domestic Programs, vol. I, op. cit., p. 116–119.

[12] The Situation of the Social Sciences in the U.S. and The Social Sciences and the Policies of Governments, Paris, Organisation for Economic Cooperation and Development, 1966, p. 71–80, as mentioned in The Use of Social Research in Federal Domestic Programs, vol. I, op. cit., p. 124–138.

[13] U.S. Congress. House. Committee on Government Operations. Subcommittee on Research and Technical Program. The Use of Social Research in Federal Domestic Programs. A Staff Study, 90th Cong., 1st sess., Apr. 1967. Washington, U.S. Government Print. Off., 1967. Four Volumes: Part I, Federally Financed Social Research, Expenditures, Status, and Objectives; Part II, The Adequacy and Usefulness of Federally Financed Research on Major National Social Problems; Part III, The Relation of Private Social Scientists to Federal Programs on National Social Problems; and Part IV, Current Issues in the Administration of Federal Social Research.

> ernmental reception for their findings; and more evidence that some use is occasionally made of them.[14]
>
> . . . The overall impression given was one of striking out in all directions at once; of the absence of clear and convincing priorities and of a widespread inability to distinguish between the order of knowledge which can and that which cannot be obtained by empirical research.[15]

The absence of a constructive evaluation by the involved scientists, in Orlans' opinion, precluded the Subcommittee from holding hearings on ways to determine priorities for research:

> . . . In trying to set up hearings which might warrant recommendations for increasing the amount of designated kinds of research and, conversely, not increasing or reducing the amount of other kinds . . . we sought and failed to obtain testimony which designated types of research which should not be supported. Even scholars most critical of the quality of governmental social programmes drew back from that sort of statement. Our resultant inability to make a cogent case for reordering social science research programmes in any definable and administrable manner was the main reason why, in the end, hearings were never held.[16]

It should be noted that scientists in most all disciplines usually have avoided priority-setting exercises because they do not want to foreclose support for research areas which might prove to be productive in the future and for other reasons. Currently there is a priority-setting exercise being conducted for the behavioral and social sciences. (See chapter VII, section J.)

D. Utilization and Sponsorship

During the 1960s considerable congressional attention was devoted to the issue of Project Camelot, a social science project funded by the Defense Department, which involved American social scientists studying conditions which could be used to deter counterrevolutionary movements in Latin America. (For additional details, see chapter II, section G in this study.) The project was halted after considerable outcry, but led to congressional hearings on Camelot and on a proposal to create a National Social Science Foundation.[17] (See chapter II in this study) and on a policy report, the "Young" report, which focused on the boundaries of ethically acceptable behavior for social scientists and the fundamental issues

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[14] Orlans, Harold. Social Science Research Policies in the United States, p. 23, as cited in Knezo, Government Science Policy, op. cit., p. 540.

[15] Orlans, Harold. Contracting for Knowledge. San Francisco Jossey-Bass Publishers, 1973. p. 117, as cited in Knezo, Government Science Policy, op. cit., p. 540.

[16] Orlans, Harold. Criteria of Choice in Social Science Research. Minerva, v. 10, Oct. 1972. p. 579, as cited in Knezo, Government Science Policy, op. cit., p. 540. Orlans' views on the study were published also in Contracting for Knowledge. San Francisco, Jossey-Bass Publishers, 1973. p. 236.

[17] On the link between Camelot and his proposal to create a National Social Foundation, see "Speech by Senator Fred R. Harris, Chairman, U.S. Senate Subcommittee on Government Research, Feb. 6, 1967. *In* U.S. Congress. Senate. Committee on Government Operations. Subcommittee on Government Research. National Foundation for Social Sciences. Hearings on S. 836. 90th Cong., 1st sess., Feb. 7, 8, and 16, 1967. Washington, U.S. Govt. Print. Off., 1967. p. 5

of governmental expectations for using these sciences in policy-making and the institutional mechanisms needed to enhance use.

1. THE "YOUNG" REPORT, THE BEHAVIORAL SCIENCES AND THE FEDERAL GOVERNMENT

A series of policy studies appeared in the late 1960s, designed in the main to assess and recommend Federal responsibilities and payoffs from funding for behavioral and social research in solving social problems. Many of these were prepared by units of the National Academy of Sciences.

The first of these was *The Behavioral Sciences and the Federal Government*, published in 1969 by the National Academy of Sciences.[18] It is commonly referred to as the "Young" report, for Donald R. Young, chairman of the committee of social and behavioral scientists who wrote the report, or the "Lyons" report, after the executive secretary of the committee, Gene M. Lyons.[19] The work was funded by the Russell Sage Foundation and the Departments of Defense and State, partially because the scope of the study included looking at the conduct of foreign area research sponsored by the Government in other countries in reaction to the cancellation of Army's Project Camelot. The "Young" report made the assumption that Federal agencies can use social and behavioral research. It recommended, among other things, that each Government agency and department initiate major programs to indentify long-range behaviorial research needs; develop training, and research funding programs; strengthen staff competence in these areas; and hire more trained social scientists. It also recommended that more basic behaviorial research on foreign countries be supported by NSF and NIH, and the education agencies to counter-act the previous domination of this area by defense agencies; that behavioral scientists be added to PSAC and the Office of Science and Technology to strengthen science policy generally and to accord behavioral and social sciences status equal to other sciences in policy; and that NSF make more "institutional and departmental grants to support long-range research. The committee also recommended that the Government create a "National Institute for Advanced Research and Public Policy," somewhat analogous to the NIH institutes to provide "continuing and long-range analyses of national [social] policies and problems."

Several actions which occurred after publication of the report coincided with the some of the report's recommendations, although others did not. For instance, social research funding and utilization functions were increased in many Federal agencies, but never to the extent recommended in the report; the Department of Defense cut back on funding for foreign area social research (a development due, perhaps more to passage of the Mansfield amendment—passed in 1969, which limited DOD's support of basic research not directly

[18] The Behavioral Sciences and the Federal Government. By the Advisory Committee on Government Programs in the Behavioral Sciences, National Research Council. Washington, D.C., National Academy of Sciences, 1968. p. 107. Publication 1680.

[19] Lyons also published an independent analysis of the social science/Federal Government relationship, based in part on this study: Gene M. Lyons. Social Science and the Federal Government. The Annals of the American Academy of Political and Social Science, v. 394, Mar. 1971 and The Uneasy Partnership, op. cit.

related to its mission—than to recommendations of the Young report)[20]; and a behavioral scientist, James Coleman, was added to the President's Science Advisory Committee. There does not seem to be significant evidence that the NSF institutional support programs for the social sciences were increased (quite the contrary, in fact, since OMB required the NSF institutional grants program to be terminated in 1970 to free up money to support the new Research Applied to National Needs Program.)[21] Lazarsfeld and Reitz reported that "it is quite likely that the creation of a special division within the National Science Foundation on Research Applied to National Needs is at least an indirect consequence . . . ." of the recommendation to create a National Institute for Advanced Research, that appeared in the Young report.[22]

2. THE "BRIM" REPORT, KNOWLEDGE INTO ACTION: IMPROVING THE NATION'S USE OF THE SOCIAL SCIENCES

The report *Knowledge Into Action: Improving the Nation's Use of the Social Sciences,* was prepared in 1969 by the Special Commission on the Social Sciences of the National Science Board, the governing board of the National Science Foundation. It is called the "Brim" report, after Dr. Orville G. Brim, Jr., chairman of the commission and then President of the Russell Sage Foundation. The report made the assumption that the social sciences "have developed acceptable scientific procedures for collection of valid information on the problems they confront . . ." and that they could make significant contributions to the solution of problems if they were better utilized. Like the Young report, the Brim report called for more social science participation in PSAC and OST. It also called for more effective integation of social science knowledge into the professions (such as engineering, journalism, and mental health), in Government, business labor, community government, and education, and the addition of social scientists other than economists to the staff of the Council of Economic Advisors. Special attention also was given to the need to improve the collection of social data and to increase linkages between bodies of data now being collected. The commission also concluded that there were limitations to the disciplinary organization of universities with respect to the production of social knowledge: "The present organization of social science research is not well oriented to attacks on national social issues" and, therefore, that the National Science Foundation should be appropriated funding to establish about 20 social problem research institutes where social scientists and interdisciplinary teams of social scientists, engineers, and other professionals would work to provide research for specific mission-oriented clients.

The social problem research units recommended in the Brim report were never created; however, the social problem-oriented aspects of the RANN program provided funding and a movement toward an institutional arrangement that coincided with the direction of recommendations taken in the report. NSF also initiated

[20] See chapter II in this report.
[21] Knezo and Bogen, The National Science Board: Science Policy and Management for the National Science Foundation, op. cit., p. 222 ff.
[22] Lazarsfeld and Reitz, op. cit., p. 17.

several support programs to forge a better link between some of the professions and the social sciences, such as the Law and Social Sciences program.

E. Inventories of Research needs in the Behavioral and Social Sciences

There also were a series of National Academy of Sciences-National Research Council studies, beginning in the mid-1960s, which involved social scientists in an effort to inventory the state-of-the-art and the research and funding needs of each of the behavioral and social sciences.[23]

1. REPORTS ON BASIC AND APPLIED RESEARCH

The first was the section on "Behavioral Sciences," published in 1965 in a collected set of essays regarding directions for basic research required to meet national goals. A section on "Application of Behavioral Science," was printed in 1967 in the companion book of essays on Applied Science and Technological Progress. Both were prepared by the members of the Committee on Science and Public Policy of the National Academy of Sciences for the House Committee on Science and Astronautics.[24]

2. THE BEHAVIORAL AND SOCIAL SCIENCES: OUTLOOK AND NEEDS

The next report along these lines is the BASS report, *The Behavioral and Social Sciences: Outlook and Needs*, jointly prepared by the National Research Council and the Social Science Research Council. It consists of a main report, published in 1969, and separate reports on each of the disciplines of the behavioral and social sciences. The main report addressed ways to improve the linkage among the various disciplines and between the social science community and the government.[25] The individual disciplinary volumes assessed the history, objectives, status of research and training needs, and utilization of particular behavioral and social sciences, including anthropology, economics, geography, history as social science, linguistics, political science, psychiatry as a behavioral science, psychology, sociology, and statistics, mathematics, and computation in the behavioral and social sciences.[26]

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[23] Some of material in this section is based on Knezo, Government Science Policy: Some Current Issues on Federal Support and Use of the Behavioral and Social Sciences, op. cit.

[24] Pfaffmann, Carl. "Behavioral Sciences." *In* U.S. Congress. House. Committee on Science and Astronautics. Basic Research and National Goals. A Report. Washington, U.S. Govt. Print. Off., 1965. p. 230, 234-235. Bauer, Raymond E. Application of Behavioral Science. *In* U.S. Congress. House. Committee on Science and Astronautics. Applied Science and Technological Progress. A Report. Washington, U.S. Govt. Print. Off., 1967, pp. 95-136.

[25] The Behavioral and Social Sciences: Outlook and Needs. A Report by The Behavioral and Social Sciences Survey Committee Under the Auspices of The Committee on Science and Public Policy, National Academy of Sciences and The Committee on Problems and Policy, Social Science Research Council. Washington, D.C., National Academy of Sciences, 1969. 320 pp. (The BASS report.)

[26] Behavioral and Social Sciences Survey. Anthoropology Panel. Anthropology. Edited by Allan H. Smith and John L. Fischer. Englewood Cliffs, Prentice-Hall, Inc., 1970, 146 p.

———. Economics Panel. Economics. Edited by Nancy D. Ruggles. Englewood Cliffs, Prentice-Hall, Inc., 1970, 179 p.

———. Geography Panel. Geography. Edited by Edward J. Taaffe. Englewood Cliffs, Prentice-Hall, Inc., 1970, 143p.

The BASS Committee recommended increases in Federal funding for research in these disciplines averaging 12 to 18 percent annually, which would ultimately bring ". . . federal expenditures [to] $923–$1,555 million in 1977." [27] This recommendation was criticized by Harold Orlans for being "unsubstantiated." [28] Funding never reached the levels recommended.

When discussing organizational arrangements needed to improve the production and utilization of policy relevant social information, the BASS committee recommended the formation of a Graduate School of Applied Behavioral Science to be located in Washington. The recommendation implied that disciplinary boundaries were an obstacle to enhanced utilization. Therefore, the School would be interdisciplinary:

> under administrative arrangements that lie outside the established disciplines. Such training and research should be multidisciplinary (going beyond the behavioral and social sciences as necessary), and the school should accept responsibility for contributing through its research both to a basic understanding of human relationships and behavior and to the solution of persistent social problems.[29]

Neither the funding recommendations nor the recommendations to create a Graduate School of Applied Behavioral Sciences were implemented.

The BASS report also made several recommendations to improve the collection and utilization of social data. It recommended that Congress enact legislation to develop a system of social indicators in order to provide better measures of social change and the effects of social innovations. It also recommended that an annual social report be produced, but stopped short of recommending the establishment of a "council of social advisers to consider the policy implications of the report . . . until the annual social report shows that social indicators do indeed signal meaningful changes in the quality of life." [30]

As discussed in chapter II in this report, proposals were considered to create a Council of Social Advisors in the Congress, but were not enacted. The Executive branch did create a system of social indicators reporting, but it was criticized because it did not portray data on issues important to all social groups. The effort was not continued after 1981. Three social indicator reports were

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———. History Panel. History As Social Science. Edited by David S. Landes and Charles Tilly. Englewood Cliffs, Prentice-Hall, Inc., 1971, 152p.
———. Linguistics Panel. Linguistic. Englewood Cliffs, Prentice-Hall, 1971.
———. Political Science Panel. Political Science. Edited by Heinz Eulau and James G. March. Englewood Cliffs, Prentice-Hall, Inc., 1969, 148p.
———. Psychiatry Panel. Psychiatry As a Behavioral Science. Edited by David A Hamburg. Englewood Cliffs, Prentice-Hall, Inc., 1970, 144 p.
———. Psychology Panel. Psychology. Edited by Kenneth E. Clark and George A. Miller, Englewood Cliffs, Prentice-Hall, Inc., 1970, 146 p.
———. Sociology Panel. Sociology. Edited by Neil J. Smelser and James A. Davis. Englewood Cliffs, Prentice-Hall, Inc., 1969, 178 p.
———. Mathematical Sciences Panel. Mathematical Sciences and Social Sciences. Edited by William Kruskal. Englewood Cliffs, Prentice-Hall, Inc., 1970, 83 p.

[27] Orlans, Social Sciences Research Policies in the United States, p. 28, cited in Knezo, Government Science Policies, op. cit., p. 540.
[28] Ibid.
[29] BASS report, op. cit., p. 11-12.
[30] Ibid., p. 7.

prepared and published: *Social Indicators, 1973, Social Indicators, 1976,* and *Social Indicators III (1980).* Also the Government published one issue of an apparently aborted series, *Status, A Monthly Chartbook of Social and Economic Trends,* July 1976.

3. OTHER PRIORITIES STUDIES

The social science community also has prepared several reports and anthologies to determine objectives, organization, and research directions and priorities. These include, for instance:

A Design for Sociology: Scope, Objectives, and Methods. Monograph 9 in a Series sponsored by the American Academy of Political and Social Sciences, Edited by Robert Bierstedt. Philadelphia, Apr. 1969, 152 p.

Wasby, Stephen L., ed. Political Science—The Discipline and Its Dimensions: An Introduction. New York, Charles Scribners Sons, 1970, 586 p.

Psychology and the Problems of Society. Edited by Frances F. Korten, Stuart W. Cook, and John I. Lacey. Washington, D.C., American Psychological Association, Inc., 1970, 459 p.

Political Science and Public Policy. Edited by Austin Ranney. Sponsored by the Committee on Governmental and Legal Processes of the Social Science Research Council. Chicago, Markham Publishing Co., 1968, 287 p.

There also have been a series of studies which looked at the priorities for research support programs and uses of social research sponsored by specific mission agencies or in particular fields. These include:

Fundamental Research and the Process of Education. Final Report to the National Institute of Education by the Committee on Fundamental Research Relevant to Education, National Research Council. Edited by S.B. Kiesler and C.F. Turner, eds. Washington, D.C., National Institute of Education, 1977;

Knowledge and Policy in Manpower: A Study of the Manpower Research and Development Program in the Department of Labor; [31]

Assessing Vocational Education Research and Development; [32] and

Understanding Crime: An Evaluation of the National Institute of Law Enforcement and Criminal Justice.[33]

F. STUDIES OF THE NATIONAL SCIENCE FOUNDATION BEHAVIORAL AND SOCIAL SCIENCES PROGRAMS

At least two major studies of NSF's programs in behavioral and social sciences were undertaken in the mid-1970s. These reports are singled out because of the critical role that National Science Foundation plays in supporting the bulk of some kinds of behavioral and social research at universities.

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[31] Cited in The Federal Investment of Knowledge of Social Problems. Washington, National Academy of Sciences, 1978, p. xi. Study Project on Social Research and Development, Vol. 1: Study Project Report.

[32] Ibid.

[33] Ibid.

One is the report entitled the *Social and Behavioral Science Programs in the National Science Foundation: Final Report*, 1976, prepared by the Committee on the Social Sciences in the National Science Foundation, which was established by the National Academy of Sciences. The NSF funded the committee "to examine the scope and quality of the Foundation's programs in the behavioral and social sciences with a view to recommending possible improvements in both the substance of the programs and the procedures for managing them." This report also appears to have been motivated, in part, by perceptions of faulty management of the Research Applied to National Needs (RANN) program and by the fact that funding for applied social research in the RANN Program had eclipsed funding for basic social research by about 25 percent. As a result, there was concern that basic research funding was being jeopardized. This report is commonly called the Simon report, after its chairman, Herbert A. Simon.[34]

The report reviewed and made recommendations regarding the organization, quality, and management of NSF's basic and applied research programs, which at that point in time were clearly differentiated into these two categories for administrative purposes. It also addressed several issues relevant to internal developments in the disciplines, especially those affected by Federal funding, such as publication of basic research reports, which had been funded with NSF support; support for young researchers in the behavioral and social sciences; and facilities and equipment support needed in these disciplines. Recommendations were made about how NSF might better manage its basic and applied support programs and about the need to involve the research community more in NSF's decisionmaking. The report criticized the way social research was supported in the RANN program. A few years after the publication of the report, the RANN program was terminated in 1981. Basic and applied research funding programs which had been supported in different divisions, were combined when the directorate which funded applied research was terminated. Thereafter, applied research no longer received separate funding and programmatic attention although applied research funding is still tracked.[35]

Around this same time, the House Committee on Science and Technology sought an independent view of the NSF behavioral and social sciences support programs. A report, prepared by Genevieve Knezo, of the Congressional Research Service, Library of Congress, was released in 1977. It gave a detailed historical picture of funding trends for behavioral and social research, identified criticisms made of programs, and traced how executive and legislative actions had influenced the scope, substance, and organization of NSF's work in these areas. It also addressed the issue of improving NSF's management data systems to improve policies relating to the eval-

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[34] Social and Behavioral Science Programs in the National Science Foundation. Final Report. By Committee on the Social Sciences in the National Science Foundation, Assemb. / of Behavioral and Social Sciences, National Research Council. Washington, National Academy of Sciences, 1976, 103 p.

[35] Tracking of Applied Research Supp. NSF Bulletin No. 81-33, Oct. 16, 1981.

uation of research, the concentration of awards, and problems in the quality of advisory panels.[36]

G. Study of Research Production and Utilization, the Study Project on Social Research and Development

The next notable study report of the behavioral and social sciences consists of a series of five studies under the general title of the *Study Project on Social Research and Development*, which was prepared by the National Research Council and published by the National Academy of Sciences. The National Science Foundation had requested and funded the project with the objective of studying the organization, management, and use of social research and development throughout the Federal Government. The study reports were released over a three-year period from 1978 to 1981. The series is sometimes called the Stokes report, for its chairperson, Donald E. Stokes.

Its parts are:

Vol. 1. The Federal Investment in Knowledge of Social Problems: Study Report, 1978, 114 p. Final analysis.

Vol. 2. The Funding of Social Knowledge Production and Application: A Survey of Federal Agencies. By Mark A. Abramson, 1978, 487 p. A survey and description of funding and agency programs.

Vol. 3. Studies in the Management of Social R&D: Selected Policy Areas. Edited by Laurence E. Lynn, Jr., 1979, 218 p. Focusing on income security, health, early childhood and the living environment.

Vol. 4. A study in the Management of Social R&D: The Functions of Demonstrations. By Cheryl D. Hayes. 1981, 84 p. Cases are: the National Nutrition Program for the Elderly, the Shirley Highway Express-Bus-on-the-Freeway Project, the early and periodic screening, diagnosis, and treatment of children demonstration program, and the cancer control program.

Vol. 5. Knowledge and Policy: The Uncertain Connection. Edited by Laurence E. Lynn, Jr., 1978, 183 p. Analytical essays dealing with issues in utilization of social research in the policymaking process.

This report took a broader view than many previous studies, in that it looked at, in addition to federally funded basic and applied research, federally funded knowledge production and utilization activities, including development. Thus it concluded that the Federal Government funded social and behavioral R&D and related activities totaling about $1.8 billion, about 3 times the amount reported in 1978 as the total for Federal obligations for the support of research in these disciplines, as reported in the National Science Foundation data series, *Federal Funds for Research and Development*. See table 2.

This report differed from previous commissioned studies in that it specifically focussed on aspects of the policymaking process that often can limit the utilization of social research and knowledge. It

[36] U.S. Congress. House, Committee on Science and Technology. Subcommittee on Science, Research, and Technology. The Psychological and Social Sciences Support Programs of the National Science Foundation: A Background Report. Prepared by [Genevieve J. Knezo], Congressional Research Service, Library of Congress, Washington, U.S. Govt. Print. Off., 1977. 168 p.

surveyed the social knowledge production and utilization activities of all agencies and assessed the problems that they shared and the modifications that they could make to enhance utilization. It also emphasized that non-Federal users are often larger users of federally funded social knowledge and production activities. The study also developed the notion that knowledge utilization and application are difficult, uncertain, and, often, ineffective. (See chapter X of this report for additional information.)

Its recommendations may be summarized as follows:

Improving the setting of research agendas.—Agencies should engage in more planning to produce and use knowledge to solve social problems; Federal and non-Federal users, that is program decisionmakers and policymakers in Congress, should be more involved in the planning of policy-relevant research; "a number of 'problem-centered' research programs should be created to undertake intensive and sustained work on major social problems"; more attention should be given to forecasting problems and creating research agendas to deal with them; and scientific criteria should guide research designed to enlarge social knowledge and methodology.

Improving the dissemination and application of knowledge.—More attention should be given to disseminating research results and to preparing syntheses of the knowledge gained in research; more research should be devoted to processes of social change and the adoption of innovations by policymakers.

Improving the management of the system.—There should be more oversight of activities to enhance knowledge production and application; the role of knowledge brokers should be evaluated and increased in the areas of policy planning and program development; agencies should review grant and contract policies to use funding instruments chosen on the basis of "a clear view of how responsibility for research planning and problem choice should be shared between the agency and the research performer.[37]

H. OECD Studies

The international social science community also looked at issues of research utilization during this time period. A major work was undertaken by the Organization for Economic Cooperation and Development, which published, first, a series of reviews of social science research, teaching, and application in the member countries and, then, studies assessing how social science information was used in governmental and industrial decisionmaking.

The series on social science in the member countries was sponsored by the OECD Directorate for Science, Technology, and Industry under authorization from the OECD Meeting of Ministers of Science. It was, in part, a response to Dr. Harvey Brooks' admonition in an OECD report on *Science, Growth and Society,* prepared for the OECD Secretary-general in 1971 "that there was a need for 'a much closer relationship between policies for science and technology and all socio-economic concerns and governmental responsi-

[37] The Federal Investment of Knowledge in Social Problems, op. cit., p. 5-6.

bilities than has existed in the past.' " [38] So far, three country reviews have been published, for France, in 1975, Japan, in 1977, and for Finland, in 1981.[39]

The study on use, entitled *The Utilisation of the Social Sciences in Policymaking in the United States*, was published in 1980. The cases dealt with negative income taxation, the concept of the labor market, the Clean Water Act of 1972, regional planning, the use of social science information at the national level, social research and development in the Department of Labor, health insurance, and criminal rehabilitation.[40] The study director concluded that social science is not always used effectively in decisionmaking. It is most effective when social scientists can understand political factors which guide decisionmakers and when decisionmakers define problems in ways which do not "exclude the possibility of a scientific contribution." [41]

There does not appear to be any published literature evaluating the utility of this OECD effort. It is obvious that the research conducted, which involved social scientists from different countries, who had to do substantial field research, provided an interesting cross-cultural perspective and afforded scholars an opportunity to observe the science policy activities of other countries in detail. The OECD series combined also provide a richer information basis to make comparative analyses of social science policies in different countries.

I. 1980's: National Research Council Reports Intended To Counteract Criticisms and Budget Cuts

By the 1980s, Federal funding for social and some kinds of behavioral research had begun to be cut back (see table 2) and the social sciences were coming under increasing attack for what was perceived as their ineffectiveness, inability to contribute to solutions of policy problems, and alleged left-wing ideological stance. Several policy reports were undertaken to document advances in and contributions of these fields, in part to counteract some of these criticisms.

1. BEHAVIORAL AND SOCIAL RESEARCH: A NATIONAL RESOURCE

In 1980, the National Science Foundation awarded funds to the National Academy of Sciences to assess the value, significance, and social utility of basic research in the behavioral and social sciences. The Academy established a Committee on Basic Research in the Behavioral and Social Sciences to respond to this charge. It was chaired by Robert McC. Adams, later named Secretary of the Smithsonian Institution. The report contains two parts published

[38] As cited in: Social Sciences Policy: France. Paris, Organisation for Economic Co-Operation and Development, 1975, p. 7.

[39] Social Sciences Policy: France, op. cit., Social Sciences Policy: Finland. Paris, Organisation for Economic Co-Operation and Development, Paris, 1981, 213 p., and Social Sciences Policy: Japan. Paris, Organisation for Economic Co-Operation and Development, 1977, 211 p.

[40] The Utilisation of the Social Sciences in Policy Making in the United States: Case Studies. Paris, Organisation for Economic Co-Operation and Development, 1980. 392p.

[41] Berger, Suzanne. "Introduction." *In* Ibid., p. 8.

in 1982.[42] Volume I of the Commission's report, entitled *Behavioral and Social Science Research: A National Resource*, is an overview with policy recommendations. In it, the Committee emphasized that "there are dangers in singling out the behavioral and social sciences for measurement against a standard of social utility. Efforts to extend the frontiers of knowledge are fully justifiable on their own terms, dependent only on their progress in altering the scientific understandings that were their original points of departure." [43] Basically the committee said that basic research in the behavioral and social sciences should be supported for its knowledge-generating properties, not necessarily because such research has immediate or even long-term practical utility. This part of the report illustrated the evolution of knowledge growth, understanding, and use by society of several disciplines. It described how several lines of research borrowed from research in such other disciplines as biology and statistics, and how some behavioral and social research provided a foundation for the growth of some professions and other research disciplines.

The major policy recommendation in the report was that:

> basic research in the behavioral and social sciences—like basic research in other disciplines—should be regarded as a long-term investment in social capital. The benefits to society of such an investment are significant and lasting, although often not immediate or obvious. A steep reduction in the investment may produce short-run savings, but it would be likely to have damaging long-term consequences for the well-being of the nation and its citizens." [44]

Part II contains essays on research findings and use in such specific areas as: demography, voting, behavior and health, income, culture, life-span, methods for surveys and experiments, psychophysics, reading, territory, property and tenure, early cognitive development, and behavior modification.

2. RELATED ACTIVITIES

There have been several reports which summarized progress in the behavioral and social sciences but without necessarily making recommendations.

Public Law 94-282, the National Science and Technology Policy, Organization, and Priorities Act of 1976, required the preparation of an "outlook" report to identify research that may help deal with problems of national significance and to assess the potential to produce innovative and potentially beneficial research over the next five years. In 1981 the Social Science Research Council, was asked, by the National Science Foundation, to assist in the preparation of this report by preparing a series of review essays on "research that is characterized by scientific merit and momentum" in

[42] Committee on Basic Research in the Behavioral and Social Sciences. Behavioral and Social Science Research: A National Resource. Edited by Robert McC. Adams, Neil J. Smelser, and Donald J. Treiman. Washington, National Academy Press, 1982. Part I. 121 p. Part II. 604 p.
[43] McC. Adams, Part 1, op. cit., p. vi.
[44] Ibid., p. 4.

policymaking processes for both the near and longer term future.[45] The status of developments in each field studied, as well as the research opportunities and likely possibilities and applications in the next five years were reviewed for the following areas: behavior and health, methods for large-scale surveys and experiments, the lifespan perspective, statistical measurement of social change, methods for surveys and experiments, psychophysics, and social and emotional development in children.

In 1983 the National Research Council of the National Academy of Sciences held a symposium, which summarized "Discoveries and Trends in the Social and Behavioral Sciences" over the fifty years that had elasped since publication of the landmark study *Recent Social Trends in the United States.* This publication had been commissioned by President Herbert Hoover in an attempt to identify social facts relevant to making public policy. According to the National Academy of Sciences, it "marked the beginning of a new era in which social and behavioral sciences began to be applied to the full range of national concerns, from education and family issues to problems in public administration, the arts, and criminology."[46] The 1983 symposium acclaimed developments in the use of behavioral and social research since 1933, but also recognized the naivete of some parts of the Ogburn report. The papers presented at the symposium reviewed the evolution of research on the bases of individual competence, understanding the rationale for economic decisions, how social science contributes to understanding of how governmental and organizational functions, and the emergence and application of social statistics. The work was published as *Behavioral and Social Science: Fifty Years of Discovery.*[47]

The exact impact of these reports, if any, is not known. However, it is likely that they together with pressures applied by the university scientific community, may have influenced the policy choices made by the Reagan Administration to restore some funding for the behavioral and social sciences. (See chart A.) The estimated fiscal year 1984 budget for the behavioral and social sciences, the first budget where funding for the behavioral and social sciences exceeded that of the fiscal year 1981 level, was 5.5 percent higher than in 1980 in current dollars, but still 8.8 percent below the fiscal year 1981 level in terms of constant dollars.

J. Decade Outlook on Research Opportunities in the Behavioral and Social Sciences: A Priorities Report Scheduled for 1986

In 1984 the Committee on Basic Research in the Behavioral and Social Sciences of the National Research Council, National Academy of Sciences, launched a project to identify priorities for the support of behavioral and social science research for the next ten

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[45] A Report from the Social Science Research Council. *In* National Science Foundation. The Five-year Outlook on Science and Technology, 1981, Source Materials, Vol. 2. Washington, U.S. Govt. Print. Off., p. 545.

[46] Porter, Gail. Reflections on a Golden Anniversary. NAS News Report, v. 34, no. 1, Jan. 1984: 4-10.

[47] Smelser, Neil J. and Dean B. Gerstein, eds. Behavioral and Social Science: Fifty Years of Discovery. In Commemoration of the Fiftieth Anniversary of the "Ogburn Report," Recent Social Trends in the United States. Washington, D.C., National Academy Press, 1986. 298p.

years. This project, called the "Decade Outlook on Research Opportunities in the Behavioral and Social Sciences," is supported principally by the National Science Foundation with the contributions from four other Federal agencies and the Russell Sage Foundation and the Academy. The project report, expected to be released in mid-1986, will identify the kinds of research subjects, resources, facilities, and programs that the Committee believes warrant support over the period 1986–1995. Priority areas would reflect areas of significant advance and potential major breakthroughs in fundamental problems. This effort follows in the track of priorities reports prepared during the early 1980s by the Academy for other scientific disciplines, especially astronomy and astrophysics (1982), geology (1983), and chemistry (1985). Apparently, an attempt will be made to identify research directions which will provide a high rate of return on investment.[48]

During the spring of 1985, the Committee announced the initial subjects on which attention will be concentrated.

They include:

> sensory and perceptual processes; psychobiology of learning and memory; information and cognitive sciences; language and language processing; development of cognitive and social competence; health and behavior; affect and motivation; social interaction; gender studies; information and decisionmaking; market efficiency; jobs and inequality;
>
> markets and organizations; collective choice institutions; emergence of social and political institutions, urban transformation and migration; causes and consequences of demographic change; family and domestic relations; formal and legal processes; crime and violence; religion and political change; culture and ideology;
>
> internationalization of social, economic, and political life; international crisis management and security studies; macroeconomic policy; social studies of modern science and technology; social knowledge producing institutions; large-scale data bases; statistical analysis, and measurement and scaling.[49]

As noted above in regard to the Reuss Committee inquiry, behavioral and social scientists historically do not appear eager to engage in priority-setting exercises.[50] Some social scientists have continued to raise critical questions about current activities of this nature. As essay by McCartney summarized major points of opposition:

> basic research priorities should not be evaluated on the basis of their practical returns to society;
>
> science is unpredictable, and social scientists have no consensual criteria for deciding when a field is ripe for discovery;
>
> setting priorities will benefit big social science research as opposed to little social science research;

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[48] Holden, Constance. Academy to Propose Social Science Research Priorities. Science, v. 225, Sept. 28, 1984: 1458–1459. A Decade Outlook on Research Opportunities in the Behavioral and Social Sciences, press release, National Research Council, June 1984.

[49] NRC Appoints Working Groups for Study of Behavioral and Social Sciences. COSSA Washington Update. v. IV, no. 7, Apr. 5, 1985. p. 5–6.

[50] See Chapter VII, Section C.

giving priority to basic research perpetuates an artificial distribution between basic and applied research;

the social sciences are more heterogeneous and less consensual than the physical sciences; priorities are unrealistic;

setting priorities will pit disciplines and specialists against each other and impair future cooperation;

setting priorities is a strategy that serves elite interests and the organizations they administer;

selecting research priorities that might resonate with current political themes will pervert social science research; and

by cooperating with the current fad of setting priorities, social scientists are being diverted from their essential role as critics of the state.[51]

K. Conclusions

Studies of the behavioral and social sciences by commissions like those discussed above serve to provide scientists with an opportunity to review the status of their work and to give them access to decisionmakers. It is difficult to pinpoint exactly if and how such reports influence policymaking. Many of the recommendations made for increased funding or new institutional support mechanisms were never heeded. However, these reports probably have provided decisionmakers with background information that helps to shape the way they think and act about policies for behavioral and social research.

[51] McCartney, James L. Setting Priorities for Research: New Politics for the Social Sciences. The Sociological Quarterly, v. 25, autumn 1984. p. 446–448.

VIII. EMPLOYMENT PATTERNS AND TRENDS IN THE BEHAVIORAL AND SOCIAL SCIENCES

A. Introduction and Overview

This chapter focuses on the size of the behavioral and social science research community and its employment trends. It shows that there has been an impressive growth in the number of behavioral and social scientists over the last twenty-five years, with the supply of trained personnel now exceeding demand. During the last few years, the employment rate for behavioral and social scientists in academia has decreased, but there have been increases in employment rates of such scientists in industry and in consulting/clinical services, especially in the case of psychologists. While there appears to be an oversupply of behavioral and social scientists overall, some positions offered by industry may go unfilled. There are indications that enrollments in some fields of behavioral and social science are falling. According to some observers, the decreasing rates of employment of behavioral and social scientists in academia may mean that the "critical mass" needed to do innovative basic research is contracting.

This chapter summarizes the size of the community overall, and employment patterns in academia, industry, and the Federal Government. Supply and demand considerations are also discussed.

B. General Patterns

The National Science Foundation estimates that the number of employed behavioral and social scientists in 1982 was 375,600. (This is the latest year for which relevant time series data are available.) This consists of 138,400 psychologists and 237,200 social scientists, or 11.5 percent of the total number of employed U.S. scientists and engineers. While the absolute number of behavioral and social scientists has increased, their proportion as a percentage of total employed scientists and engineers has decreased slightly overtime from 14.1 percent of total employed scientists and engineers in 1976.[1]

There appears to have been a slight change between 1976 and 1982 in the percentage of behavioral and social scientists who report research and development as their primary work activity. In 1976, 12.7 percent of social scientists reported R&D as their primary work activity. That figure increased to 14.3 percent in 1982. The comparable figures for psychologists were 10.04 percent in 1976 and 7.8 percent in 1982. The great majority of those reporting

[1] Figured from table B-7, U.S. National Science Foundation. U.S. Scientists and Engineers: 1982. Vol. 1, Detailed Statistical Tables, Washington, U.S. Govt. Print. Off., 1984. (NSF 84-321) and Table B-44, U.S. National Science Foundation, U.S. Scientists and Engineers, 1980. Detailed Statistical Tables (NSF 82-314.)

R&D, report basic and applied research, as opposed to development, as their primary activity.[2]

The employer category of "business and industry" was the single largest employer category of all social scientists in 1982, employing some 43.5 percent. This represents a significant increase since 1976 in the proportion of social scientists working in business and industry, when 20.3 percent reported this as their primary function. The single largest employer category for psychologists in 1982 was educational institutions, which employed some 38 percent of psychologists followed by business and industry at 33 percent. In 1976 12.5 percent of psychologists reported "business and industry" as their primary employer.[3]

Other data show that of those scientists and engineers with doctorates employed in industry in 1983, 11.5 percent were psychologists (up substantially since 1973, when 5.8 were psychologists), and 6 percent were social scientists, a doubling of the proportion since 1973, when 3.2 percent were social scientists.[4]

Data from table 40 show that about 38 percent of all psychologists and 28 percent of all social scientists were employed in educational institutions in 1982. This rate represents a 3 percent decrease in academic employment for psychologists and a 14 percent decrease in academic employment for social scientists from 1976 (when 42 percent were employed in educational institutions).[5]

Data on doctorates show that the proportion of doctoral level psychologists employed in educational institutions has remained about the same over the period 1973 to 1983 (11.6 percent to 11.3 percent). There was a slight, but steady, increase in the rate of employment of doctoral level social scientists in academic institutions (18.6 percent of the total of all fields in 1976, to 21.8 percent in 1983).[6]

The next largest employer category for social scientists is the Federal Government, and for psychologists, is nonprofit institutions. State and local governments employ more psychologists than does the Federal Government.[7]

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[2] See table 40.
[3] See table 40.
[4] Table B-12a, Employed Doctorial Scientists and Engineers by Field and Type of Employer: 1973, 1981, and 1983 *In* Science and Engineering Personnel: A National Overview. Washington, D.C. 1985. (NSF 85-302.)
[5] See Table 40.
[6] Based on Table B-12, in NSF 85-302, op. cit.
[7] Based on table B-9, in NSF 85-302, op. cit.

TABLE 40.—EMPLOYED SCIENTISTS AND ENGINEERS, BY FIELD, TYPE OF EMPLOYER, AND WORK ACTIVITY: 1976 AND 1982*

Field and type of employer	Grand total		Research and development							
			Total		Basic research		Applied research		Development	
	1976	1982	1976	1982	1976	1982	1976	1982	1976	1982
PSYCHOLOGISTS										
Total	109,500	138,400	11,000	10,900	5,100	4,100	5,200	4,600	700	2,300
Business and industry	13,700	45,300	1,700	2,200	(1)	100	1,400	1,100	300	1,000
Educational institutions	45,300	52,200	5,500	5,600	3,700	3,400	1,600	1,800	200	300
Nonprofit organizations	29,800	26,000	1,700	1,200	400	100	1,200	800	200	300
Federal government	3,300	3,300	1,000	1,200	300	300	600	600	100	200
Military	1,300	800	100	100	(1)	(1)	100	100	(1)	(1)
State and local government	10,700	8,100	600	400	400	(1)	200	(1)	(1)	400
Other government	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Other	5,000	500	100	100	100	(1)	(1)	(1)	(1)	100
No report	400	2,300	200	300	200	100	(1)	200	(1)	(1)
SOCIAL SCIENTISTS										
Total	217,600	237,200	27,800	34,100	10,900	7,600	15,000	21,100	1,800	5,400
Business and industry	44,200	103,200	,600	8,000	100	600	1,400	4,800	100	2,500
Educational institutions	90,500	65,700	13,500	11,000	7,500	5,000	4,800	5,900	1,300	100
Nonprofit organizations	14,500	18,100	2,600	3,100	1,200	600	1,300	2,400	100	100
Federal government	24,200	22,100	4,400	6,900	900	900	3,500	4,600	(1)	1,400
Military	300	900	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
State and local government	34,600	18,700	4,800	3,200	700	300	3,700	2,000	400	900
Other government	1,000	5,300	200	1,700	(1)	200	100	1,200	(1)	400
Other	6,500	400	800	100	500	(1)	200	100	(1)	(1)
No report	1,700	2,900	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
ECONOMISTS										
Total	57,200	103,100	10,300	17,100	2,800	2,500	6,400	12,300	1,200	2,300
Business and industry	18,600	53,300	1,300	4,400	100	400	1,100	2,900	100	1,100
Educational institutions	20,400	21,800	5,200	4,100	1,700	1,300	2,500	2,700	1,000	(1)
Nonprofit organizations	800	3,100	400	1,200	200	200	200	1,000	(1)	(1)
Federal government	11,600	14,800	2,300	4,800	600	600	1,700	3,500	(1)	700

TABLE 40.—EMPLOYED SCIENTISTS AND ENGINEERS, BY FIELD, TYPE OF EMPLOYER, AND WORK ACTIVITY: 1976 AND 1982*—Continued

Field and type of employer	Grand total		Research and development							
			Total		Basic research		Applied research		Development	
	1976	1982	1976	1982	1976	1982	1976	1982	1976	1982
Military	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
State and local government	3,700	3,500	700	1,100	100	(1)	600	1,000	100	100
Other government	600	4,600	100	1,400	(1)	(1)	100	1,000	(1)	400
Other	1,300	300	200	100	(1)	(1)	200	100	(1)	(1)
No report	300	1,600	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
SOCIOLOGISTS/ANTHROPOLOGISTS										
Total	41,400	57,000	6,200	9,800	4,200	3,700	1,900	4,900	100	1,200
Business and industry	6,800	21,300	200	2,100	(1)	100	200	1,300	(1)	700
Educational institutions	24,400	20,300	4,600	4,300	3,600	2,700	1,000	1,600	(1)	(1)
Nonprofit organizations	2,900	4,700	300	1,200	200	200	(1)	900	100	(1)
Federal government	1,700	2,400	400	800	200	200	100	500	(1)	100
Military	(1)	700	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
State and local government	5,000	6,600	600	1,000	100	200	500	500	(1)	300
Other government	(1)	300	(1)	300	(1)	200	(1)	100	(1)	(1)
Other	400	100	100	(1)	100	(1)	(1)	(1)	(1)	(1)
No report	100	600	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
OTHER [SOCIAL SCIENTISTS]										
Total	119,000	77,100	11,300	7,200	4,000	1,400	6,700	3,900	600	1,900
Business and industry	18,800	28,600	100	1,400	(1)	100	100	700	(1)	700
Educational institutions	45,700	23,600	3,800	2,600	2,200	1,000	1,300	1,600	300	(1)
Nonprofit organizations	10,800	10,300	1,800	700	700	200	1,100	500	(1)	100
Federal government	10,900	4,900	1,700	1,200	(1)	(1)	1,700	600	(1)	600
Military	300	100	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
State and local government	25,900	8,600	3,400	1,200	500	100	2,600	600	300	600
Other government	400	400	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Other	4,700	(1)	500	(1)	500	(1)	(1)	(1)	(1)	(1)
No report	1,400	700	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)

Field and type of employer	Management/administration						Teaching		Consulting	
	Total		Of R&D		Other than R&D					
	1976	1982	1976	1982	1976	1982	1976	1982	1976	1982
PSYCHOLOGISTS										
Total	18,700	28,600	6,600	5,400	12,100	23,200	31,900	28,100	4,300	7,300
Business and industry	3,600	15,400	1,800	2,500	1,800	12,900	2,100	1,500	1,000	3,400
Educational institutions	5,200	6,100	1,800	1,700	3,400	4,500	23,500	21,900	1,300	1,400
Nonprofit organizations	5,700	3,900	1,900	500	3,800	3,400	3,000	3,100	500	1,700
Federal Government	900	800	700	400	200	400	100	(1)	200	400
Military	100	200	(1)	(1)	100	200	700	100	(1)	(1)
State and local government	2,900	1,900	300	300	2,600	1,700	2,100	1,000	300	300
Other government	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Other	200	(1)	(1)	(1)	200	(1)	300	200	1,000	(1)
No report	(1)	200	(1)	(1)	(1)	200	(1)	100	(1)	(1)
SOCIAL SCIENTISTS										
Total	62,700	76,300	17,600	16,200	45,100	60,100	57,500	47,700	8,900	8,000
Business and industry	18,700	46,700	3,300	7,000	15,300	39,700	100	1,100	3,200	6,100
Educational institutions	14,500	7,800	2,600	2,300	11,900	5,500	55,700	42,900	100	100
Nonprofit organizations	5,500	6,600	2,200	2,100	3,300	4,500	700	2,100	(1)	300
Federal Government	9,100	6,100	5,600	2,800	3,500	3,300	300	100	700	200
Military	(1)	600	(1)	(1)	(1)	600	(1)	100	(1)	(1)
State and local government	13,300	6,500	3,600	1,200	9,600	5,200	300	1,000	2,000	1,000
Other government	600	1,400	100	700	400	700	(1)	100	(1)	400
Other	1,100	(1)	200	(1)	900	(1)	300	200	2,900	(1)
No report	(1)	600	(1)	(1)	(1)	500	100	200	(1)	(1)
ECONOMISTS										
Total	15,200	32,500	5,800	6,700	9,400	25,800	12,000	16,000	1,800	5,300
Business and industry	7,300	24,200	1,600	3,400	5,600	20,800	(1)	400	900	4,400
Educational institutions	2,200	1,900	600	400	1,600	1,500	11,800	15,300	100	(1)
Nonprofit organizations	200	900	200	500	(1)	400	(1)	(1)	(1)	100
Federal Government	3,700	3,400	2,000	1,500	1,600	2,000	100	100	100	100
Military	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
State and local government	1,500	800	1,300	400	300	400	(1)	(1)	100	300

Field and type of employer	Management/administration						Teaching		Consulting	
	Total		Of R&D		Other than R&D					
	1976	1982	1976	1982	1976	1982	1976	1982	1976	1982
Other government	200	1,200	100	500	100	700	(1)	(1)	(1)	400
Other	100	(1)	(1)	(1)	100	(1)	100	(1)	700	(1)
No report	(1)	100	(1)	(1)	(1)	(1)	100	200	(1)	(1)
SOCIOLOGISTS/ANTHROPOLOGISTS										
Total	8,300	15,900	2,000	3,100	6,400	12,700	15,400	14,500	100	900
Business and industry	3,200	9,500	300	1,300	2,900	8,200	(1)	300	(1)	300
Educational institutions	1,900	1,900	500	1,000	1,400	900	15,000	12,900	(1)	(1)
Nonprofit organizations	700	1,100	200	400	600	600	200	900	(1)	200
Federal Government	300	800	300	200	100	600	(1)	(1)	(1)	(1)
Military	(1)	500	(1)	(1)	(1)	500	(1)	(1)	(1)	(1)
State and local government	1,800	1,800	500	200	1,300	1,600	200	200	100	300
Other government	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Other	400	(1)	200	(1)	200	(1)	(1)	100	(1)	(1)
No report	(1)	300	(1)	(1)	(1)	300	(1)	(1)	(1)	(1)
OTHER [SOCIAL SCIENTISTS]										
Total	39,200	27,900	9,900	6,400	29,300	21,500	30,100	17,200	7,100	1,800
Business and industry	8,100	13,000	1,400	2,300	6,800	10,700	100	500	2,300	1,400
Educational institutions	10,500	4,000	1,500	900	9,000	3,200	28,800	14,700	(1)	(1)
Nonprofit organizations	4,500	4,700	1,900	1,200	2,700	3,500	400	1,200	(1)	(1)
Federal Government	5,100	1,800	3,300	1,100	1,800	700	200	(1)	600	(1)
Military	(1)	(1)	(1)	(1)	(1)	(1)	(1)	100	(1)	(1)
State and local government	10,000	3,900	1,800	700	8,100	3,200	200	700	1,900	400
Other government	300	300	(1)	300	300	(1)	(1)	(1)	(1)	(1)
Other	700	(1)	(1)	(1)	700	(1)	300	(1)	2,200	(1)
No report	(1)	200	(1)	(1)	(1)	200	(1)	(1)	(1)	(1)

Field and type of employer	Production/inspection		Reptg./Stats./computing		Other		No report	
	1976	1982	1976	1982	1976	1982	1976	1982
PSYCHOLOGISTS								
Total	2,200	6,000	3,300	3,400	35,300	49,500	2,900	4,700
Business and industry	100	3,600	700	1,300	4,100	16,500	400	1,400
Educational institutions	800	1,300	800	1,000	7,000	14,100	1,200	700
Nonprofit organizations	500	700	800	500	17,100	14,200	400	700
Federal Government	200	(1)	500	100	300	800	(1)	(1)
Military	(1)	100	200	(1)	200	200	(1)	(1)
State and local government	400	200	300	500	4,000	3,300	(1)	300
Other government	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Other	100	(1)	(1)	(1)	2,600	200	600	(1)
No report	(1)	(1)	(1)	(1)	(1)	200	200	1,500
SOCIAL SCIENTISTS								
Total	9,600	10,500	20,900	27,500	21,200	27,400	9,100	5,700
Business and industry	6,200	8,100	6,900	11,700	5,500	19,900	2,000	1,500
Educational institutions	200	(1)	3,000	1,500	1,200	1,800	2,200	500
Nonprofit organizations	(1)	1,100	1,700	1,500	3,800	3,100	300	300
Federal Government	1,000	500	5,200	7,200	3,000	800	600	200
Military	(1)	100	100	(1)	100	(1)	(1)	100
State and local government	2,200	400	3,300	4,000	6,500	71,00	2,200	900
Other government	(1)	200	200	1,300	(1)	(1)	100	200
Other	(1)	(1)	400	200	900	(1)	100	(1)
No report	(1)	(1)	00	100	200	(1)	1,500	2,000
ECONOMISTS								
Total	2,700	3,800	9,000	17,600	3,800	8,300	2,500	2,500
Business and industry	2,500	3,200	3,000	8,600	1,800	7,400	1,800	700
Educational institutions	(1)	(1)	400	200	500	300	300	100
Nonprofit organizations	(1)	(1)	100	800	(1)	100	(1)	(1)
Federal Government	200	400	4,200	5,400	900	500	100	100
Military	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
State and local government	(1)	(1)	700	1,300	500	(1)	100	100
Other government	(1)	200	200	1,200	(1)	(1)	100	200
Other	(1)	(1)	300	200	(1)	(1)	(1)	(1)
No report	(1)	(1)	(1)	(1)	200	(1)	100	1,400
SOCIOLOGISTS/ ANTHROPOLOGISTS								
Total	800	4,100	5,100	4,200	3,800	7,500	1,700	1,600
Business and industry	200	2,700	2,100	1,100	900	5,200	100	600
Educational institutions	200	(1)	1,600	500	200	400	1,000	200
Nonprofit organizations	(1)	800	500	500	800	500	300	100
Federal Government	(1)	200	200	600	600	100	200	(1)
Military	(1)	(1)	(1)	(1)	(1)	(1)	(1)	100
State and local government	500	300	700	1,500	1,200	1,300	(1)	500
Other government	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Other	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
No report	(1)	(1)	(1)	(1)	(1)	(1)	100	200
OTHER (SOCIAL SCIENTISTS)								
Total	6,100	2,700	6,800	5,700	13,700	11,600	4,900	1,600
Business and industry	3,600	2,200	1,800	2,000	2,800	7,300	(1)	300
Educational institutions	(1)	(1)	1,000	800	600	1,100	1,000	300
Nonprofit organizations	(1)	300	1,000	200	3,000	2,500	(1)	200

Field and type of employer	Production/inspection		Reptg./Stats./computing		Other		No report	
	1976	1982	1976	1982	1976	1982	1976	1982
Federal Government	800	(1)	700	1,300	1,600	300	200	100
Military	(1)	100	100	(1)	100	(1)	(1)	(1)
State and local government	1,700	(1)	1,900	1,300	4,700	400	2,100	300
Other government	(1)	(1)	(1)	100	(1)	(1)	(1)	(1)
Other	(1)	(1)	100	(1)	900	(1)	100	(1)
No report	(1)	(1)	(1)	(1)	(1)	(1)	1,400	500

* Figured from table B–7, U.S. National Science Foundation. U.S. Scientists and Engineers: 1982. v. 1, Detailed Statistical Tables. Washington, U.S. Govt. Print. Off., 1984. (NSF 84–321) and Table B–44, U.S. National Science Foundation. U.S. Scientists and Engineers, 1980: Detailed Statistical Tables (NSF 82–314.)

[1] Too few cases to estimate. Note: Detail may not add to total because of rounding. Source: National Science Foundation.

Of all doctoral scientists employed by the Federal Government, the proportion of psychologists has decreased (from 6.6 percent in 1976 to 4.7 percent in 1983.) There has been a marked increase in the proportion of doctoral level scientists in government that are social scientists (from 9.3 percent in 1976 to 16.7 percent in 1983).[8]

The shift in employment away from academia is also reflected in the employment patterns of all doctoral level scientists. Of all the doctoral level scientists and engineers employed in 1983 in business, academia and the Federal Government, some 27 percent were psychologists and social scientists. About one-third were employed outside of academia. In 1973, when 23 percent were behavioral and social scientists, only about ⅛ were employed outside of academia.[9]

Between 1970 and 1980, growth of employment for all scientific and engineering disciplines increased about 30 percent. The growth rate in employment for psychologists increased about 80 percent, but the growth rate for social scientists was less, at about 27 percent. (See chart E.) There were also larger employment growth rates for psychologists in industry (231 percent) than for social scientists in industry (133 percent) over the period 1976 to 1982.[10] The growth of psychologists employed in this category may be due to increased independent clinical practice.[11]

[8] Table B–12a, NSF 85–302, op. cit.

[9] Based on Table B–12a, NSF 85–302, op. cit.

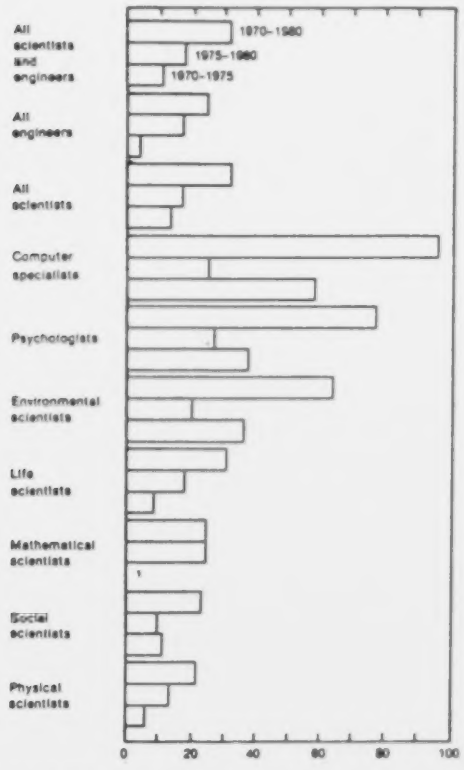
[10] See table 40.

[11] It should be pointed out that the American Psychological Association considers that the data from the NSF employment survey are misleading because psychologists who are self-employed were included by NSF in the "Business and Industry" category, but in most cases (21.9 percent of the cases according to APA's 1983 Census of Psychological Personnel) these psychologists are actually clinical psychologists work in independent practice. The fact that a large percentage of psychologists in independent practice is unique to the field of psychology, as compared to other fields of science, and should be pointed out in the report. The category of "Business and Industry," which would actually include corporations such as Baxter-Travenol, IBM and AT&T, accounts for only 2.4 percent of employed doctoral psychologists, as reflected in APA's 1983 census data. See the following table:

COMPARISON OF ESTIMATES OF EMPLOYED DOCTORAL PSYCHOLOGISTS IN 1983: NSF VS. APA

	NSF (N=46,645)		APA (N=50,838)	
	Number	Percent	Number	Percent
Academic:				
Universities and four-year colleges	19,377	41.5	18,708	36.8
Two-year colleges	951	2.0	1,068	2.1
Elementary and secondary schools	1,854	4.0	2,694	5.3
Hospital/clinics	6,042	13.0	8,693	17.1
Independent practice	NA	NA	11,134	21.9
Business and industry	13,020	27.9	1,220	2.4

CHART E. Growth in Science/Engineering Employment by Field: 1970-80



Source: U.S. National Science Foundation. Science and Engineering Employment: 1979-80. Washington, U.S. Govt. Print. Off., 1981, Chart 2, p. 5. (NSF 81-310).

COMPARISON OF ESTIMATES OF EMPLOYED DOCTORAL PSYCHOLOGISTS IN 1983: NSF VS. APA—Continued

	NSF (N-46,645)		APA (N-50,838)	
	Number	Percent	Number	Percent
Self-employed (not private practice)	NA	NA	1,068	2.1
Government	3,339	7.2	1,424	2.8
Military	188	0.4	153	0.3
Nonprofit and other	1,773	3.8	4,122	8.1
Not specified	101	0.2	554	1.1

Source: NSF data was obtained based on detailed statistical reports of the 1983 Survey of Doctoral Scientists and Engineers. Data collected by APA are from the Census of Psychological Personnel which will be reported as Stapp, J., A.M. Tucker, G.R. VandenBos. Census of Psychological Personnel: 1983. American Psychologist (Dec. 1985), in press.
Source: American Psychological Association, Dec. 1985.

C. Employment of Social and Behavioral Scientists in Academia

The absolute numbers of scientists employed in educational institutions increased from 1976 to 1982, but, as noted above, NSF data show that from 1976 to 1982 there was a 3 percent decrease in the rate in employment of psychologists in academic institutions. The corresponding rate was a 14 percent decrease for social scientists.[12]

These decreases may be due to enrollment trends for the study of these sciences, since academic employment rates for social and behavioral scientists appear to fluctuate with rates of academic enrollment. A growing enrollment in the behavioral sciences in colleges and universities and was witnessed in the 1960s and through the 1970s, with a corresponding expansion of employment rate of behavioral and social scientists. There is considerable evidence that the enrollment growth trends of the past are declining, with a potential for declines in academic employment for these scientists. The peak number of undergraduate degrees in the social sciences and psychology was in 1974, when 145,449 such degrees were awarded. A steady decline began since then, with the number of such degrees awarded in 1982 at 112,775. There are significant variations by disciplinary field. Regarding the award of baccalaureate degrees, NSF reported:

> . . . Between 1974 and 1982, the number of psychology degrees dropped 21 percent and the number of sociology and political science degrees declined 55 percent and 16 percent, respectively. Conversely, the number of economics degrees rose 38 percent over the same period.[13]

Similarly patterns were seen in the award of masters degrees. The peak year for the award of masters degrees in this field was 1977, with the award of 17,294 masters degrees in the social sciences. A steady decline ensued, so that in 1982 the number awarded was 15,415.

About one-third of all Ph.Ds. awarded for the sciences and engineering, have gone annually to the fields of the psychological and social sciences since the mid-1970s.[14] The number of Ph.D. degrees awarded for these fields has stayed about the same, fluctuating around the 6,000 per year mark since 1974. But this number represents a net change, since decreases in doctoral recipients in the social sciences have been offset by increases in the number of pyschology doctoral recipients.[15] (See tables 41 and 42.)

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[12] Based on data in table 40 op. cit. Over the 1973 to 1983 decade, according to NSF, there was substantial growth of employment for doctoral social scientists in academia (almost 90 percent), and a smaller rate of growth of employment for doctoral level psychologists (about 50 percent). (NSF 85–302, op. cit. p. 10.)

[13] NSF 85–302, op. cit. p. 156.

[14] Based on data in Table B–31, Doctoral Degrees Awarded by Field, in NSF 85–302, op. cit., p. 156.

[15] See table 42 next page.

TABLE 41.—NUMBER OF DOCTORATE RECIPIENTS BY FIELD OF STUDY, 1974–83

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Total all fields	33,047	32,951	32,946	31,717	30,873	31,237	31,015	31,345	31,074	31,190
Total social sciences/psychology	5,884	6,066	6,214	6,073	6,039	5,961	5,855	6,142	5,836	6,055
Social sciences	3,286	3,315	3,331	3,083	2,984	2,870	2,757	2,784	2,678	2,748
Anthropology	379	386	428	385	399	383	370	369	333	373
Area studies	35	36	30	18	26	24	22	20	19	20
Criminology							30	35	36	49
Demography										26
Economics	834	868	855	811	778	780	744	808	737	792
Econometrics	19	27	30	29	23	22	22	17	24	21
Geography	195	187	155	155	158	129	131	109	106	121
International relations	133	113	123	96	92	81	80	87	77	77
Political science and government	1	1	628	614	603	522	505	445	459	397
Political science and public administration	775	748	40							
Public policy studies										68
Sociology	645	680	734	725	610	632	601	605	568	525
Statistics	37	43	35	35	46	23	33	40	43	47
Urban studies	70	76	92	80	76	91	79	94	93	74
Social sciences, general	34	36	35	27	33	33	32	22	34	17
Social sciences, other	129	114	146	108	140	150	108	133	149	141
Psychology	2,598	2,751	2,883	2,990	3,055	3,091	3,098	3,358	3,158	3,307
Clinical	771	810	883	936	1,061	1,069	1,106	1,259	1,167	1,209
Cognitive										65
Comparative	23	22	28	22	20	21	8	11	12	11
Counseling	201	231	267	269	278	315	299	351	348	432
Developmental	162	181	190	203	208	221	207	201	192	219
Experimental	354	351	357	337	299	293	307	283	240	209
Educational	122	134	124	136	145	163	137	180	140	153
Industrial and organizational	80	63	73	81	74	87	66	87	83	90
Personality	60	62	62	63	41	42	43	49	36	32
Physiological	118	124	133	132	126	102	108	102	90	94
Psychometrics	24	17	27	19	15	25	21	27	8	10
Quantitative										14
School	89	103	143	148	125	125	176	133	166	121
Social	202	233	209	202	204	216	190	180	179	191
Psychology, general	250	244	218	263	299	207	210	279	242	287
Psychology, other	147	176	169	179	160	205	220	216	255	170

Source: Taken with adaptions from the National Academy of Sciences. Summary Report 1983. Doctorate Recipients from United States Universities. Washington, 1983, Appendix Table B, p. 48.

TABLE 42.—NUMBER OF DOCTORATES BY FIELD OF STUDY, 1960–83

Year of Doctorate	Field of Doctorate							
	Total	Physical sciences	Engineering	Life Science	Social Sciences	Humanities	Education	Prof. and Other
1960	9,733	2,152	794	1,729	1,668	1,600	1,549	241
1961	10,413	2,325	940	1,783	1,778	1,624	1,679	284
1962	11,500	2,485	1,216	1,975	1,890	1,725	1,393	316
1963	12,728	2,910	1,357	2,083	2,027	1,842	2,137	372
1964	14,325	3,115	1,664	2,361	2,258	2,169	2,351	407
1965	16,340	3,550	2,074	2,684	2,327	2,530	2,736	439
1966	17,949	3,828	2,301	2,885	2,619	2,711	3,040	565
1967	20,403	4,333	2,604	3,143	3,102	3,087	3,481	653
1968	22,936	4,652	2,855	3,707	3,495	3,467	4,029	731
1969	25,743	5,005	3,265	4,204	3,984	3,788	4,659	838
1970	29,498	5,628	3,434	4,693	4,566	4,278	5,857	1,042
1971	31,867	5,739	3,498	5,268	5,189	4,648	6,435	1,090
1972	33,043	5,538	3,503	5,083	5,470	5,055	7,085	1,309

TABLE 42.—NUMBER OF DOCTORATES BY FIELD OF STUDY, 1960–83—Continued

Year of Doctorate	Field of Doctorate							
	Total	Physical sciences	Engineering	Life Science	Social Sciences [1]	Humanities	Education	Prof. and Other
1973	33,755	5,311	3,364	5,167	5,758	5,414	7,238	1,503
1974	33,047	4,976	3,147	4,962	5,884	5,170	7,241	1,667
1975	32,951	4,857	3,002	5,026	6,066	5,046	7,359	1,595
1976	32,946	4,509	2,834	5,026	6,214	4,881	7,725	1,757
1977	31,717	4,379	2,643	4,920	6,073	4,562	7,455	1,685
1978	30,873	4,193	2,423	5,038	6,039	4,231	7,194	1,755
1979	31,237	4,299	2,490	5,223	5,961	4,139	7,385	1,740
1980	31,015	4,111	2,479	5,460	5,855	3,868	7,586	1,656
1981	31,345	4,170	2,528	5,607	6,142	3,748	7,497	1,653
1982	31,074	4,284	2,646	5,709	5,836	3,559	7,232	1,808
1983	31,190	4,424	2,780	5,540	6,055	3,494	7,147	1,750

[1] Includes psychology.

Source: National Academy of Sciences. Summary Report 1983 Doctorate Recipients from United States Universities, Washington, 1983, Table A, p. 5.

There are indications that the academic and research manpower pool in the social sciences may be declining. The number of doctorate recipients in the social sciences declined 17.5 percent from 1976 to 1983 and is roughly at its 1970 level of 2,646.[16] In addition, according to Alan Kraut, Deputy Executive Officer for Policy Studies, American Psychological Association, a decline in doctorates awarded for the research subfields in psychology was noted for the period 1976 to 1981.[17] First year enrollments in research psychology fields declined by 25 percent, during the period 1975 to 1980. He estimated that if the trend continued, the number of psychology researchers receiving doctorates in 1986 would equal the number received in 1968. (See chart F.)[18] Kraut attributed the trends to reductions in Federal support for research training, instability of funding for some research areas, and a decline in the academic markets for social and behavioral scientists.

The 1976 Report of the Committee on National Needs for Biomedical and Behavioral Research Personnel, National Academy of Sciences, assessed the current and projected supply and demand for scientists in these disciplines. The Committee projected that the rate of university and college enrollments would slow in the early 1980s and actually decline over the next 10 years.[19] The impact of

[16] U.S. National Science Foundation. Science and Engineering Doctorates: 1960–1982. Washington, D.C., U.S. Govt. Print. Off., 1983, p. 18. (NSF 83-328)

[17] Research subfields are: developmental, educational/school, experimental, comparative, physiological, personality, psychometrics, and social psychology. Based on: Syverson, P. R. Two Decades of Doctorates in Psychology: A Comparisons With National Trends, American Psychologist, v. 37, 1982: 1203–1212.

[18] Idem. See also Letter Kraut to Hon. Doug Walgren, Mar. 14, 1983. In an unpublished communication to CRS dated Nov. 8. 1985, the American Psychological Association noted that:

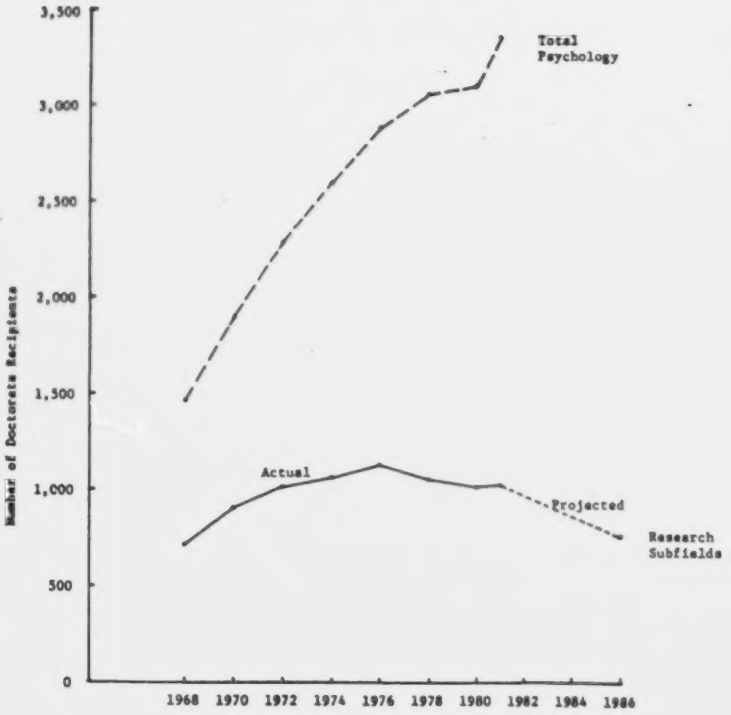
"The figures cited by Alan Kraut, of APA, can be updated, showing even more severe decreases in the production of new PhDs in psychology. Using NRC figures for 1976 and 1984, the numbers of new PhDs in many of the research fields of psychology have declined drastically. For example, during this eight-year period, the number of new doctorates in comparative psychology has dropped from 22 to 13—a 54 percent decrease. Similarly, the number of new PhDs in experimental psychology declined 53 percent from a peak of 357 in 1976 to 207 in 1984, and the number of new PhDs in physiological psychology has decreased 45 percent from its peak of 133 in 1976. New doctorate production in the personality area has declined by 60 percent since 1976—from 62 to 25. Social psychology also has been affected, with new PhDs dropping by one-third from 209 to 157."

[19] National Academy of Sciences. 1976 Report Personnel Needs and Training for Biomedical and Behavioral Research. Washington, 1976. p. 47.

declining enrollments in the social and behavioral sciences would in turn cause a reversal in academic demand. Faculties would not grow and vacancies in academic positions would occur primarily through attrition, they forecast.

In the 1983 report on *Personnel Needs for Training and Biomedical and Behavioral Research,* the Committee on National Needs of Biomedical and Behavioral Research Personnel of the Institute of Medicine estimated that demand for new personnel to fill vacancies for academic employment for behavioral science faculty (including social sciences) for each year between 1980 and 1988 would be 1,410 new positions annually.[20]

CHART F. Doctorate Production in Psychology, 1968 to 1981 (Actual) and Projected to 1986 for Research Subfields



Source: Taken from memo letter to Honorable Doug Walgren from Alan Kraut, Mar. 14, 1983.

[20] National Academy of Sciences. 1983 Report Personnel Needs and Training for Biomedical and Behavioral Research. Washington, 1983. p. 107

D. Trends Toward Non-Academic Employment

As reported above, increasing numbers of psychologists and social scientists are finding work outside the academic sector. This increase is both absolute, and proportional in relation to the total number of behavioral and social scientists. In 1976, 59 percent of psychologists worked outside of academia; in 1982 that increased to 62 percent.[21] In 1976, 58 percent of all social scientists worked outside of academia. That rate increased to 72 percent in 1982.[22] (See also chart G.) The 1983 report of the Committee on National Needs said that from 1973–1981, the nonacademic employment of Ph.D. scientists in the behavioral fields grew at an average rate of approximately 10 percent, while academic employment of the disciplines increased at the rate of only 4 percent.[23] According to a report of the American Psychological Association new doctorates are most influenced by these shifts in employment patterns.

> Though the proportion of doctoral psychologists employed in the academic sector has decreased, the actual numbers have increased at an average rate of about 8.4% per year. Only among recipients of new doctorates do we see any real decline in the number employed in academic settings and, even there, the effect was not pronounced until sometime after 1976.[24]

The shift toward nonacademic employment was toward work in business/industry, self employment in consulting and clinical work, and employment in nonprofit institutions. Primary work activities for these scientific personnel has started to shift from teaching and research to consulting, the delivery of professional services, and to applied activities.[25] However, research may also be conducted in connection with these other primary work activities.

The 1983 Committee on National Needs for Biomedical and Behavioral Research Personnel compiled a body of data describing the trends in employment patterns for the behavioral sciences. (The Committee defined the behavioral sciences as including anthropology, sociology, psychology, and speech and hearing sciences.) Data in table 43 reflects the steady increase in employment outside of academia for the behavioral sciences as defined by the Committee. The data show the following percentages increases in categories of employment for behavioral scientists between 1973 and 1981: total academic employment, up 43 percent; business employment, up 171 percent; employment in non-profit, up 96 percent; and self-employment, up 287 percent.[26]

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[21] See table 40.
[22] Idem.
[23] 1983 Report on Personnel Needs and Training . . ., op, cit., p. 110.
[24] Pion, Georgine M., Lipsey, Mark W., Psychology and Society. The Challenge of Change. American Psychologist, v. 39, July 1984: 744
[25] 1983 Report on Personnel Needs and Training, op. cit., p. 200. See also table 4.
[26] Idem, p. 200.

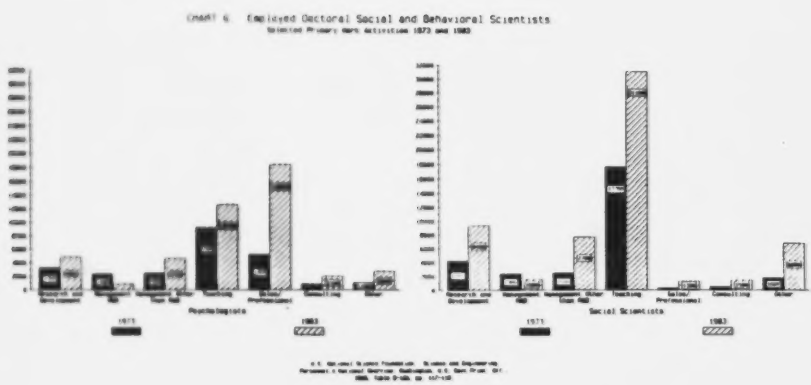

TABLE 43.—PH.D.'S EMPLOYED IN ALL BEHAVIORAL SCIENCE FIELDS, 1962–81 [1]

Fiscal year	Total labor force	Academia (excluding postdoctorals) [2]			Postdoctoral appointments	Business	Government [3]	Hospitals/clinics	Nonprofit	Self-employed	Other	Unemployed and seeking
		Total	Public	Private								
1962	11,240	5,339	NA	NA	137	NA	NA	NA	NA	NA	5,730	34
1963	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1964	13,606	8,143	NA	NA	209	NA	NA	NA	NA	NA	5,227	27
1965	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1966	15,746	9,783	NA	NA	251	NA	NA	NA	NA	NA	5,681	31
1967	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1968	19,953	12,915	NA	NA	331	NA	NA	NA	NA	NA	6,667	40
1969	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1970	24,253	16,175	NA	NA	415	NA	NA	NA	NA	NA	7,566	97
1971	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1972	28,983	18,602	NA	NA	513	910	2,112	2,783	904	1,506	1,372	227
1973	31,749	19,787	13,683	6,104	604	1,009	2,184	3,282	1,080	1,882	1,533	388
1974	35,267	22,324	NA	NA	603	1,346	2,255	4,198	958	2,193	1,140	250
1975	38,781	23,631	16,093	7,538	739	1,410	2,641	4,958	1,164	2,708	1,141	389
1976	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1977	44,351	25,588	17,728	7,860	1,038	1,789	2,950	5,640	1,496	3,648	1,436	766
1978	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1979	49,355	26,894	18,265	8,629	1,144	1,955	3,275	6,126	2,156	5,216	1,839	750
1980	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1981	53,917	28,277	19,059	9,218	1,016	2,735	3,391	6,560	2,112	7,279	1,829	718

[1] Behavioral sciences include anthropology, sociology, and speech and hearing sciences. Figures for 1962–70 were estimated by the Committee. Figures for 1972–81 were obtained from the National Research Council (1973–82). Foreign nationals who received doctorates from U.S. institutions were included.

[2] Public and private figures were adjusted by the Committee to include a small number of academically employed individuals for whom control of institution could not be determined.

[3] Includes FFRDC laboratories for 1973 and 1975–81. For other years, FFRDC laboratories may be included in any category.

Source: National Academy of Sciences. 1983 Report—Personnel Needs and Training for Biomedical and Behavioral Research. Washington, 1983, Appendix Table C7, p. 200.

In addition, the American Psychological Association (APA), in a statistical analysis of its members, estimated that in 1980, for the first time since World War II, an equal number of doctoral recipients, emphasizing research as differentiated from clinical training,

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secured employment outside of educational institutions as within them.[27]

Simultaneously there occurred a redirection of graduate training programs in psychology with a new emphasis being placed on nonacademic careers and applied research activities. (See Tables 44 and 45.) From 1972-1973, 62.8 percent of doctoral training programs had focused on training academic researchers, by 1979–1980 the percentage was 44.9 percent. In contrast, training for work in nontraditional objectives (that is, to do research in the field and to attack problems) comprised 2.5 percent of the training in 1972-1973, and by 1979–1980, increased to 16.3 percent.[28]

The decline in academic employment is more salient in the nonclinical areas of the behavioral sciences. Data compiled by the Committee on National Needs illustrates that the shift has affected both employment and training. The nonclinical component of the behavioral sciences conducts most of the research in these fields. Behavioral scientists who had initially been trained for research careers appear to be shifting into clinical work, self-employment, and practice. In 1972 about 36 percent of all behavioral scientists, as defined by the Committee on National Needs, worked in clinical areas. By 1981, this percentage increased to 44 percent. (See Table 46.) It may be that the difficulty in finding employment in research and academic positions has led many scientists to obtain licensure or certification for clinical practice.

E. Trends in the Employment of Social and Behavioral Scientists in Business/Industry

In 1976, 18 percent of all psychological and social scientists worked in business and industry; by 1982 that increased to 40 percent. In 1982, 148,500 behavioral and social scientists worked in industry according to NSF. This is an increase of 156 percent since 1976.[29]

Research and development is not a major focus of the work activities of psychologists or of the social scientists employed in industry. In 1976, 13,700 psychologists were employed in business and industry, with 1,700, or 12.4 percent classified as working in research and development.

TABLE 44.—DOCTORAL TRAINING PROGRAMS IN PSYCHOLOGY BY SPECIALTY FIELD: SELECTED YEARS

Specialty	Academic Year					
	1972–1973		1975–1978		1979–1980	
	Number	Percent	Number	Percent	Number	Percent
Clinical, counseling, school	276	22.8	262	24.8	329	26.0
Developmental	108	8.9	125	11.8	127	10.0
Educational	96	7.9	84	8.0	127	10.0
Social and personality	106	13.8	157	14.9	177	14.0
Industrial/organizational	60	4.9	42	4.0	51	4.0

[27] Pion, Georgine M., Mark W. Lipsey. Psychology and Society. The Challenge of Change. American Psychologist, v. 39, July 1984: 753.
[28] Ibid., p. 751.
[29] See table 40.

TABLE 44.—DOCTORAL TRAINING PROGRAMS IN PSYCHOLOGY BY SPECIALTY FIELD: SELECTED YEARS—Continued

Specialty	Academic Year					
	1972–1973		1975–1978		1979–1980	
	Number	Percent	Number	Percent	Number	Percent
Experimental, comparative, and physiological	445	36.7	345	32.7	393	31.0
General	24	2.0	10	0.9	25	2.0
All other	36	3.0	31	2.9	38	3.0
Total	1,213		1,.56		1,267	

Note: Compiled from American Psychological Association (1971, 1974, 1978).

Source: Pion, Georgene M. Lipsay, Mark W. Psychology and Society. The Challenge of Change. American Psychologist vol. 39, July 1984: 751.

TABLE 45.—MAJOR EMPHASIS OF DOCTORAL TRAINING PROGRAMS IN PSYCHOLOGY: SELECTED YEARS

Emphasis	Academic Year					
	1972–73		1975–76		1979–80	
	Number	Percent	Number	Percent	Number	Percent
Academic, research	762	62.8	635	60.1	569	44.9
Conventional service provider [1]	267	22.0	252	23.9	320	25.3
Conventional educational and organizational	154	12.7	126	11.9	172	13.6
Nontraditional applied or nonacademic career	30	2.5	43	4.1	206	16.3
New specialty area [2]	30	2.5	39	3.7	57	4.5
Traditional specialty area, applied emphasis [3]	0	0.0	4	0.4	149	11.8
Total	1,213		1,056		1,267	

[1] Clinical, counseling, school psychology.
[2] For example, environmental, program evaluation, community, law, aging.
[3] For example, applied developmental, applied social, applied experimental.

Note: Compiled from American Psychological Association (1971, 1974, 1978).

Source: Pion, Georgine M. Lipsey, Mark W., Psychology and Society. The Challenge of Change. American Psychologists, vol. 39, July 1984: 751.

TABLE 46.—PH.D'S EMPLOYED IN THE CLINICAL AND NONCLINICAL BEHAVIORAL SCIENCES, 1972–81

Field	Force	Academia	Postdoc appts.	Business	Government	Hospitals/ clinics	Nonprofit	Self-employed	Other	Unemployed and seeking	Total
Clinical 1972	28,983	4,159	124	46	1,135	2,489	293	1,251	967	47	10,511
Nonclinical		14,443	389	864	977	294	611	309	405	180	18,472
Clinical 1973	31,749	4,325	168	41	1,119	2,899	385	1,509	1,042	99	11,587
Nonclinical		15,462	436	968	1,065	383	695	373	491	289	20,162
Clinical 1974	35,267	4,873	216	202	1,114	3,795	265	1,883	932	36	13,316
Nonclinical		17,451	387	1,144	1,141	403	693	310	208	214	21,951
Clinical 1975	38,781	5,151	181	1,261	4,431	4,431	381	2,246	994	59	14,873
Nonclinical		18,480	558	1,241	1,380	527	783	462	147	330	23,908
Clinical 1977	44,351	5,437	384	413	1,252	5,102	676	3,147	1,097	83	17,591
Nonclinical		20,151	654	1,376	1,698	538	820	501	339	683	26,760
Clinical 1979	49,355	5,786	317	452	1,664	5,644	1,119	4,758	1,337	128	21,205
Nonclinical		21,108	827	1,503	1,611	482	1,037	458	502	622	28,150
Clinical 1981	53,917	6,147	295	839	1,671	5,972	1,045	6,196	1,399	185	23,749
Nonclinical		22,130	1,896	1,720	588	588	1,067	1,083	430	533	30,168

Source: Compiled from data in National Academy of Sciences. 1983 Report Personnel Needs and Training for Biomedical and Behavioral Research. Washington, 1983, Appendix Table C8, C9, p. 201–202.

By 1982, of the 45,300 psychologists working in industry 2,200 or 4.8 percent were classified as doing research and development.[30] The largest concentration of work activities for those psychologists categorized as employed in business and industry was "other activities."

The strong rate of employment increases for psychologists in industry in fields other than research, probably can be attributed to changing policies for the development of human resources, and most especially to increased clinical and consulting services, resulting from introduction of reimbursement coverage for psychologists by health insurance programs.

Almost three times more social scientists than psychologists were classified as working in business and industry in 1976. In 1976, 44,200 social scientists were classified as working in industry, with 1,600 or 3.6 percent in research and development,[31] By 1982, there were 103,200 social scientists working in industry, with 7.7 percent, or 8,000 classified as working in research and development.[32] The largest field of activity for social scientists both years was in management or administration. The focus of the R&D activities for psychologists and social scientists for both years was in applied research.

Although it is unclear, the increasing trend in industry for social scientists to do research, may also reflect the growth of the survey research/opinion industry, and the increasing reliance on using social scientists in human factors engineering and innovation in high technology industry.

F. Employment of Social and Behavioral Scientists in the Federal Government

The data describing employment of behavioral and social scientists in the Federal Government indicate that the number of such scientists is decreasing as a percentage of total employed psychological and social scientists. About five social scientists are employed for every psychologist in the Federal Government; the largest employer of social scientists has always been the Defense Department and related agencies, while the largest employer of psychologists is the Veterans Administration. Management rather than research is the common job activity.

Historical data on scientists and engineers collected by the National Science Foundation, indicate that the employment rate of social and behavioral scientists in the Federal Government was 6.8 percent of the total social and behavioral science population in 1970.[33] Another NSF publication using a different data base revealed that in 1976, the Federal Government employed 8.4 percent of all social and behavioral scientists.[34] Data in table 40 show that in 1976, 8.4 percent of the total number of social and behavioral science personnel were employed in the Federal Government. This

[30] Idem.
[31] Idem.
[32] Idem.
[33] U.S. National Science Foundation. American Science Manpower 1970. Washington, U.S. Govt. Print. Off., 1971. p. 59-60. (NSF 71-45).
[34] U.S. National Science Foundation. National Patterns of Science and Technology Resources 1984. Washington, U.S. Govt. Print. Off., 1984. p. 77. (NSF 84-311).

percentage decreased to 6.8 percent in 1982.[35] In 1983, the 27,000 behavioral and social scientists employed by the Federal Government represented 6.9 percent of all social and behavioral scientists and, 8.8 percent of the total science/engineering personnel employed in the Federal Government.[36] Of those social and behavioral scientists employed by the Federal Government in 1983, 87.4 percent were social scientists and 12.5 percent were psychologists.[37] Prior to this decline, the rate of employment increased overtime, but at a substantially slower rate than for the increases in business and industry.

There is a significant difference in the employment rate of doctoral social and behavioral scientists in the Federal Government from 1973 to 1983. Data collected by the NSF revealed that the number of psychologists at the doctorate level employed in the Federal Government remained constant at 1,200 in 1973, 1981, and 1983.[38] However, for social scientists, there was a dramatic increase between the years 1973 and 1981. In 1973, 1,700 doctoral social and behavioral scientists were employed in this sector; and by 1981, 4,300, were employed, an increase of 152.9 percent.[39] Employment was maintained at the level of 4,300 for 1983.[40]

The National Science Foundation also collects data on employment of scientists directly from the Federal agencies. These data differ from and are not comparable with the data already reported. They showed similar trends however. See table 47.

TABLE 47.—EMPLOYMENT OF PSYCHOLOGISTS AND SOCIAL SCIENTISTS IN FEDERAL AGENCIES, 1973, 1978, AND 1983[1]

	1973	1978	1983
Psychologists	2,492	3,174	3,344
Social scientists	10,162	13,511	14,835

[1] Table B-1, B-2 and B-3 in: U.S. National Science Foundation. Federal Scientific and Technical Workers: Numbers and Characteristics, 1973, and 1983. Washington, U.S. Govt. Print. Off., 1985. NSF 85-312.

These data also show that the single largest agency employer of social scientists for 1973 and 1983 is the Department of Defense, while the single largest employer of psychologists is the Veteran's Administration.[41] According to yet another NSF publication, the most common work activity of such scientists in Government is management, with teaching, consulting, and research the next most frequently listed activities.[42]

G. Growth of Health Service Providers

A large part of the expansion of the behavioral sciences and its diversification into non-academic employment is attributable to the

[35] See table 40.
[36] U.S. National Science Foundation. Science and Engineering Personnel: A National Overview. Washington, U.S. Govt. Print. Off., 1985. p. 91. (NSF 85-302).
[37] Idem.
[38] NSF 85-302, p. 114.
[39] Ibid.
[40] Ibid.
[41] Ibid., p. 77.
[42] See NSF 85-302.

increasing number of psychologists entering the subfield of health services.[43] Health service providers have increased since the mid-1960s, at an annual average rate of 10.2 percent of all doctorates awarded.[44]

In the 1982 American Psychological Association (APA) Human Resource Survey, approximately 57 percent of all respondents reported that they were employed in the delivery of health services, a setting where research is not expected as part of employment.[45] The APA excluded those individuals not possessing a doctoral or masters degree, about 4.5 percent of the respondents.[46] Of those psychologists providing health services (HSP), 89.2 percent held doctoral degrees.[47] APA estimates that as of early 1983, there were between 34,000 and 36,000 doctoral HSP psychologists.[48] For 1979, the estimate was 32,000.[49] This area of employment can be expected to increase.

H. Reports of the Committee on National Needs for Biomedical and Behavioral Research Personnel

P.L. 93-348, the National Research Service Awards Act of 1974, directed the National Academy of Sciences (NAS) to conduct a continuing study of the national needs for research personnel in the biomedical and behavioral sciences. The study design was to focus on needed personnel in specific subject areas and on the type of training that should be provided by the agencies authorized to fund National Research Service Awards (NRSA)—the National Institutes of Health (NIH), the Alcohol, Drug Abuse and Mental Health Administration (ADAMHA), and the Division of Nursing, Health Resources and Services Administration (HRSA). Congressional action reauthorized the NSRA programs in P.L. 95-623, the Health Services Research Act of 1978. The Committee on National Needs for Biomedical and Behavioral Research Personnel has issued seven reports since 1975.

In the *1976 Report on Personnel Needs and Training for Biomedical and Behavioral Research*, the Committee on National Needs for Biomedical and Behavioral Research Personnel indicated that there would be a potential oversupply for Ph.D. social and behavioral scientists by 1985.[50] Reports released by the Bureau of Labor Statistics and the National Science Foundation (NSF) noted similar employment trends and labor market conditions.[51]

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[43] Health services are defined as assessment and intervention procedures used for understanding, predicting, or alleviating emotional, psychological and behavioral disability and discomfort (with direct clinical supervision of such services included, but program development, evaluation, and administration excluded).

[44] Pion, Georgine M. Mark W. Lipsey. Psychology and Society. The Challenge of Change. American Psychologist, v. 39, July 1984: 744.

[45] VandenBos, Gary R., Joy, Stapp. Service Providers in Psychology. Results of the 1982 APA Human Resources Survey. American Psychologist, v. 38, Dec. 1983: 1331.

[46] Ibid.

[47] Ibid., p. 1330.

[48] Ibid., p. 1351.

[49] VandenBos, Gary R., Joy, Stapp, Richard R. Kilburg. Health Service Providers in Psychology, Results of the 1978 APA Human Resources Survey. American Psychologist, v. 36, Nov. 1981: 1394.

[50] National Academy of Sciences. 1976 Report on Personnel Needs and Training for Biomedical and Behavioral Research. Washington, 1976. 218 p.

[51] Ph.D Manpower: Employment Demand and Supply 1972-85. U.S. Department of Labor, Bureau of Labor Statistics. Bulletin 1860. Washington, U.S. Govt. Print. Off., 1975. 21 p., and

The Committee on National Needs proposed a restructuring of the Federal programs for training grants and fellowships in the field of biomedical and behavioral science from predominantly predoctoral to postdoctoral. This, it said, would reorient training to research where more emphasis was needed. It reported:

> The Committee recognizes the need for continued federal support of training of the behavioral scientists who are conducting research relevant to the health needs of the country. Current trends in behavioral science research, however, suggest that a significant reorientation of emphasis in the federally supported research training effort is desirable at this time. Scientific advances in these fields have vastly increased the complexity of research methods and imposed requirements for more intensive training. While the number of Ph.D. level individuals currently being trained in the behavioral sciences appears to meet market demands in the conventional disciplines, there is a growing need for more specialized behavioral science research training to deal with these increasingly complex research questions in the areas of behavior and health. The committee therefore recommends an orderly tapering down of predoctoral support with a concomitant emphasis on providing for research specialization through postdoctoral training, thus assuring the active participation of advanced research training to meet the health needs of the country.[52]

The Committee's proposal was to be achieved by shifting funds among NSRA programs (NIH, ADAMHA, and HRSA). Some of the recommendations by the Committee were:

> (1) Reverse the appointment of fellowship awards in the behavioral sciences from the fiscal year 1975 level of 90 percent predoctoral and 10 percent postdoctoral to one that is 30 percent predoctoral and 70 percent postdoctoral.
>
> (2) Increase the number of postdoctoral awards in the clinical sciences approximately 10 percent over the fiscal year 1975.
>
> (3) Enlarge the training program in health services research while simultaneously incorporating the training by the NRSA Act.

Many in the social and behavioral science community opposed the recommendations by the Committee. Specifically, the American Psychological Association disputed the Committee's labor market analysis and its recommeded shifts for both programs and personnel.[53] There was added reluctance by directors of NRSA programs to relinquish any support for predoctoral training. The Committee's 1976 recommendations were partly based on constant fiscal

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U.S. National Science Foundation. Projections of Science and Engineering Doctorate Supply and Utilization 1980–85, as cited in National Academy of Sciences. 1983 Report on Personnel Needs and Training for Biomedical and Behavioral Research. Washington, 1983, 218 p.

[52] 1976 Report on Personnel Needs and Training . . ., op. cit., p. 9–10.

[53] National Academy of Sciences. 1983 Report on Personnel Needs and Training for Biomedical and Behavioral Research. Washington, 1983. p. 90.

year 1975 funding for research training in the behavioral sciences. Such funding levels did not occur. The fiscal year 1975 research training budget of ADAMHA was $19.7 million; in fiscal year 1978, it had been reduced to $16.9 million. By fiscal year 1982, it increased to $17.2 million, but was still $2.5 million below the fiscal year 1975 level.[54]

After collecting new data on the disciplines and reviewing past data, the Committee on National Needs, in its 1983 report, concluded that circumstances had changed since 1975 to justify revision in its recommendations about postdoctoral training. In 1983, the committee decided that the decline in Ph.D. production in the nonclinical research fields of behavioral sciences ultimately would limit the supply of independent investigators needed to conduct basic research. The Committee recommended that predoctoral training remain at the fiscal year 1981 level (650 awards) during the mid-1980s, while postdoctoral support should increase from the fiscal year 1981 level of 350 awards to 540 awards by fiscal year 1987.[55]

I. Concluding Comments

The Scientific Manpower Commission, using National Science Foundation data, concluded that overall by 1987 there will be a surplus of about 25,300 behavioral and social scientists. Psychologists will be six percent over employment demand levels, but about one-third of social scientists will be above demand levels in 1987, according to NSF. These data are based on a supply model which has accounted for the "net outward mobility" to be expected of behavioral and social scientists during this period, and, as a result "substantial surpluses seem apparent," according to the Scientific Manpower Commission.[56] See table 48.

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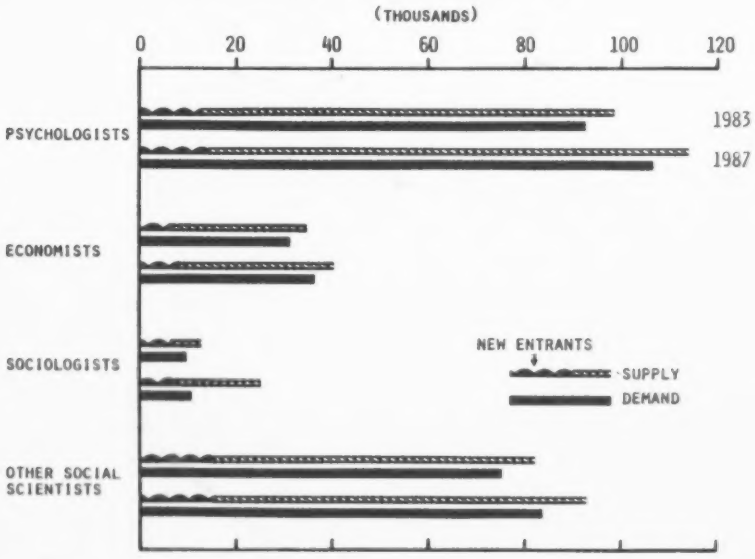
[54] Ibid., p. 91.
[55] Ibid.
[56] Scientific Manpower Commission. Opportunities in Science and Engineering. A Chartbook Presentation. Washington, D.C., Nov. 1984, p. 52, 53 and 90. Based on data from U.S. National Science Foundation. Projected Response of the Science, Engineering, and Technical Labor Market to Defense and Nondefense Needs: 1982-87. Washington, U.S. Govt. Print. Off., 1984

TABLE 48. *Supply and Demand for Social and Behavioral Scientists, 1983 and 1987*[67]

SUPPLY AND DEMAND FOR SOCIAL AND BEHAVIORAL SCIENTISTS, 1983 AND 1987



[67] National Science Foundation. Projected Response of the Science, Engineering, and Technical Market to Defense and Nondefense Needs: 1982–87, NSF 84–304, *In* Opportunities in Science and Engineering. A Chartbook Presentation. Washington, D.C., Scientific Manpower Commission, 1984. p. 52.

Despite this oversupply, data presented in this chapter have shown that there is a decreasing number of doctoral level social scientists and a decreasing number of doctoral level psychologists training to concentrate on research. There is increasing diversification in employment of behavioral and social scientists at all levels from academia, the traditional focus of research activity, to industry and other sectors, where research is not the principal activity conducted.

These trends may have negative implications for both academic research and industry. Kenneth Prewitt, former President of the Social Science Research Council, complained that the social sciences are not recruiting "adequate talent," because of limited research funds and employment opportunities. This may erode the

scope of the knowledge base in these areas, because social sciences will ask less "consequential and compelling research questions." [58]

There may also be erosion of the "critical mass" necessary to do innovative research, according to another scholar, commenting on sociology:

> The indexes of a decline in the critical mass of scholars include many fewer positions in colleges and universities, fewer Ph.D.s being graduated . . ., fewer graduate students being recruited to the discipline, and a declining number of sociologists who retain their membership in professional associations . . . . The concept of a critical mass of scholars is not very precise. But even if relatively few persons make a disproportionately large contribution to the innovative ideas of a discipline . . ., then a much larger number of scholars still are needed to fill in and elaborate the outlines of big ideas and to serve as audience, critics, and communicants of big ideas. No one knows what critical mass of persons is needed to sustain productive scholarship, but gloomy projections about the number of available positions in academe during the next two decades and decreasing resources may push sociology to its limits of survival.
>
> One index of the decline of creative production in sociology is a substantial decrease in the number of manuscripts submitted to sociology journals during the past few years.[59]

The decrease in the supply of doctoral level social scientists and new entrants at lower certification levels may portend a gap in manpower needed to meet projected demand in some areas. The National Science Foundation concluded that between 225,000 and 235,000 social science jobs will need to be filled during the period 1982–1987. One fourth of all doctoral scientists employed in industry are social and behavioral scientists. The Foundation projected that the growth in employment of social scientists (at all levels, B.S., M.A., Ph.D.) in industry will range from 2.2 to 3.2. percent for each year between 1982 and 1987, the highest growth rate of any of the scientific fields studied except for computer science. (The other fields surveyed were mathematical and physical sciences, and biological and agricultural sciences.) The projected increase in workers in industry, tallied at between 25,000 to 35,000, will result from industrial expansion. Two occupational categories seem most in demand: psychologists and economists:

> Psychologists can be expected to benefit from sustained emphasis of human resources development, health maintenance, and program evaluation in such fields as consumer protection, health, education, etc. They can also expect to be increasingly called on to analyze the psychological

[58] Prewitt, Kenneth. Making a Difference: The Social Sciences. Written for Social Science Research in Canada, a conference sponsored by the Science Council of Canada, Ottawa, Oct 3–5, 1984. p. 12–13.

[59] McCartney, James L. Setting Priorities for Research: New Politics for the Social Sciences. The Sociological Quarterly, v. 25, Autumn 1984: 439.

> impact of technological change. Economists, on the other hand, can anticipate an expanding role within industry by applying their theories and statistical techniques in areas essential to business management decisions; marketing, pricing, international finance, and forecasting.[60]

The Federal Government has had a major role to play in supporting the training of behavioral and social personnel over the last forty years. Obviously its support patterns are significant. But as industry's need for research in particular areas increases, industry may be asked to assume increasing support functions. In the absence of targetted industrial programs, market mechanisms of supply and demand may provide acceptable personnel levels. However, the effects of laissez-faire policies of manpower production on U.S. research capabilities may be an issue for additional consideration by policymakers and scientists. Perhaps the priorities report being prepared now by the National Academy of Sciences will clarify some of the issues regarding supply and demand for personnel in these areas and suggest funding priorities for Government and other sectors.

[60] (NSF 84-304), op. cit., p. 10.

IX. EXAMPLES OF THE APPLICATION OF BEHAVIORAL AND SOCIAL RESEARCH IN COMMERCIAL, ADMINISTRATIVE, AND TECHNICAL SETTINGS

A. Introduction

The Task Force requested that this study include "an analysis through a limited number of case studies of the advantages and disadvantages of using the research results of social and behavioral sciences in public and private decision-making about policy issues." Since this is an extremely complex subject, this report divides the issue into its component parts and discusses them in this chapter and chapters X and XI.

Often, studies that assess the use of behavioral and social science information conclude that it is difficult to demonstrate that such information is used in decisionmaking or has affected policymaking. This is due to limitations in the content of information, subtleties of the communications process, the complexities of problem-solving and policymaking, and that fact that policymaking has multiple decision points. However, these studies also point out that evaluations of the utility of information in decisionmaking depend on the ways information and decisionmaking are defined. Behavorial and social scientists may take several different roles when interacting with decisionmakers. The effectiveness of their actions depends on the role they are playing, what they wish to achieve, the circumstances of the decisionmaking situation, and the kind of issues at stake.

Herbert A. Simon, a Nobel prize winner who is both an economist and a psychologist, discussed these facets of the use and impact of behavorial and social information on decisionmaking. He differentiated professional activities and functions relating to social problem solving into three types. Behavioral and social scientists may play an "engineering-medical" role when they, within the ethical norms of their professions, provide answers to specific questions asked by decisionmakers, without regard necessarily to policy outcomes.[1] Information and advice may deal with how to improve productivity, efficiency, education, behavior etc. There are numerous examples of the effective application and use of behavioral and social research information in technical, clinical, organizational, and administrative settings postulated by this model. Many have already been discussed, others will be discussed in this chapter. (Simon's second and third models deal with public policy oriented uses) Generally the effective use and application of behavioral and

[1] Simon, Herbert A. Are Social Problems Problems That Social Science Can Solve? In Kruskal, William H., ed. The Social Sciences: Their Nature and Uses. Papers presented at the 50th Anniversary of the Social Science Research Building, the University of Chicago, Dec. 16-18, 1979. Chicago, The University of Chicago Press, 1982. p. 12-14.

social knowledge in public policy settings are constrained by a number of factors. These will be examined in chapters X and XI.) [2]

This chapter gives examples of the application of behavioral and social research directly. The examples cited deal with behavior and health, survey research, psychophysics, human factors, behavior therapy, organizational and industrial behavior, modeling, and data bases. Also described are the everyday use of behavioral and social science terminology by the public, and illustrations of the contributions of behavioral and social sciences to understanding in the physical and natural sciences.

B. Compilations of Research Findings

Social and behavioral scientists have abundantly documented the technical contributions of their work to the understanding of human development and human and social institutions. One major compilation is the *International Encyclopedia of the Social Sciences,* consisting of 17 volumes published by Macmillan in 1967. It contains essays giving state-of-the-art reviews of major behavioral and social sciences disciplines, prepared by leading scholars. An international perspective on research breakthroughs and contributions appears in a three-volume encyclopedia published by UNESCO on *Main Trends of Research in the Social and Human Sciences,* published in the 1970s.[3] Other analytical pieces also document major behavioral and social sciences discoveries or advances. The National Academy of Sciences held a symposium in 1983, commemorating 50 years of behavioral and social science research in America.[4] There is the study *Major Advances in Social Science Since 1900,* which assessed major theoretical and methodological advances and conditions which led to creativity in the areas discussed. (According to the authors, "practical demands or conflicts stimulated about three-fourths of all contributions between 1900 and 1965.")[5] There also are studies which document the contributions of each discipline and studies which evaluate the direct application of behavioral and social science findings in the helping pro-

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[2] Simon's second model describes a process of "legislative reference", "in which the professional person provides advice or expert knowledge to a legislative body or other public agency" specifically with regard to solving social problems. Here the client might be interested not only whether "Sesame Street" helps children learn, (the engineering-medical model), but also whether and how it can help disadvantaged children learn as much as advantaged children. His third model, of "public diffusion", is one in which the social scientist ". . . incorporates his knowledge or advice in a book or article . . . and diffuses it through the various channels of publication (or communication)." Knowledge disseminated may be specific or broad, but it is intended to be used by a wide range of "publics," who hold a variety of views about how to solve problems. (Idem.)

[3] Main Trends of Research in the Social and Human Sciences. Part One. Social Sciences. Paris, UNESCO, 1970, 820 p. and Main Trends of Research in the Social and Human Sciences. Part 2, vol. 1, Anthroplogical and Historical Sciences, Aesthetics and the Science of Art. 920 p. Part 2, vol. 2, Legal Science, Philosophy. Paris, Mouton Publishers, UNESCO, 1978. p. 921-1591.

[4] Behavioral and Social Science: Fifth Years of Discovery, op. cit.

[5] Deutsch, Karl W., John R. Platt, and Dieter Senghaas, Major Advances in Social Science Since 1900: An Analysis of Conditions and Effects of Creativity. May 1970. Mental Health Research Institute, University of Michigan, p. 55. The list includes such advances as Lenin's "theory of one-party organization and revolution"; psychoanalysis and depth psychology (Freud, Jung and Adler); correlation analysis and social theory (Pearson, Edgeworth, and Fisher); conditioned reflexes (Pavlov); large-scale non-violent political action (Gandhi); projective tests (Rorschach and Murray); quantitative political science and basic theory (Merriam, Rice, Gosnell, Lasswell); game theory (v. Neumann and Morgenstern); large-scale sampling in social research (Hansen); linear programming (Kantorovich, Souto, Dantzig, and Dorfman); econometrics (Tinbergen, Samuelson, and Malinvaud); and cost-benefit analysis (Hitch).

fessions, such as in rural sociology, public health, and crime control.[6]

Two recent comprehensive compilations describing the utility of these sciences are: (1) the Social Science Research Council Report (SSRC) on "Social and Behavioral Sciences," written for the 1981 *Five-Year Outlook,* and (2) the NRC study *Behavioral and Social Science Research: A National Resource,* published by the National Academy of Sciences in 1982. The SSRC report focused on research accomplishments and frontiers in behavior and health, methodology for surveys and experiments, life-span, statistical measurements of social change, and childhood development.[7] The Academy study summarized work in demography, voting, behavior and health income distribution, culture, life-span perspective, methodology, psychophysics, cognitive sciences, territoriality, and behavior therapy.[8] Some of these and related developments will be summarized next.

C. Behavior and Health

The behavioral and social sciences have contributed to understanding of the effects of behavior on biological processes and physical illness caused by such habits as smoking, excessive drinking, and poor diet. It has been estimated that "over half of the cases seen by physicians have psychological, or behavioral, rather than physical, orgins." [9] The provision of psychological counseling services and behavior modification geared to prevention have been shown to cut the number of such visits and lower health care costs. According to Nelson:

> In a series of studies conducted in a large prepaid health plan, it was shown that providing psychological services reduced the use of medical services to such a degree that the cost savings from the latter totally offset the cost of providing the new service. Other effects shown by the literature include lower hospitalization use, reduction in the use of pharmaceuticals, reduction in the use of expensive and often inappropriate diagnostic procedures, as well as freeing of the medical staff to give greater attention to cases where their particular expertise is genuinely needed.[10]

Several reports have been published by the Institute of Medicine of the National Academy of Sciences on the status and needs of re-

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[6] Social Science in America: The First Two Hundred Years. Edited by Charles M. Bonjean, Louis Schneider, and Robert L. Lineberry. Austin, University of Texas Press, 1976, 221 p. Lazarsfeld, Paul F., William H. Sewell, and Harold L. Wilsensky, eds. The Uses of Sociology, London, Weidenfeld and Nicolson, 1968.

[7] Social Science Research Council. "The Five-Year Outlook for Science and Technology; Social and Behavioral Sciences." *In* National Science Foundation. The Five-Year Outlook on Science and Technology, 1981. 2 vols., Washington, D.C., U.S. Govt. Print. Off., 1981, 543–698.

[8] Behavioral and Social Science Research: A National Resource. Edited by Robert McC Adams, Neil J. Smelser, and Donald J. Treiman. Washington, National Academy Press, 1982, 2 vols.

[9] Nelson, Stephen D. Materials on Psychology's contributions to National Productivity, American Psychological Association, memo, Mar. 16, 1981, p. 6. See also Krantz, David S. Behavior and Health in The Five-Year Outlook for Science and Technology, op. cit., p. 561–588.

[10] Nelson, op cit., p. 6. See also: Congress Hears How Psychological Services Reduce Health Costs. Behavior Today, v. 16, June 10, 1985. p. 1–2. See also: Flay, B. R. Psychosocial Approaches to Smoking Prevention: a Review of Findings. Health Psychology, v. 4, 1985. p. 449–488.

search dealing with health and behavior. Two examples are *Behavior, Health Risks and Social Disadvantage,* and *Health and Behavior: Frontiers of Research in the Biobehavioral Sciences.*[11] These reports appear to have important implications for preventive medicine and commensurate cost savings, since it has been estimated that Americans spend $1 billion a day on health care.

D. Survey Research

The development of the technology of survey research and its associated statistical methodologies and techniques, initiated over fifty years ago,[12] have been supported largely by the Federal Government.[13] This research has affected not only the kinds of appeals and presentations candidates make to voters, but also has spawned multi-million dollar industries of political and opinion polling, market research, economic forecasting, standardized testing (for education, aptitude, intelligence, and personnel selection) information dissemination, and program evaluation, based wholly on social science research.[14] The National Science Board reported in 1981 that "it has been estimated that $4 billion are spent each year in the United States on all kinds of survey research, an industry that employs millions of people directly or indirectly and has had an impact on every American. The capital investment for survey research in staff, training, equipment, supervision, and interviewing is large. An army of trained interviewers is constantly on call to undertake projects."[15]

The public is most familiar with one aspect of surveys, public opinion polls, but survey research also serves many other functions. According to the National Science Board:

> Survey research is . . . an important tool of the . . . Census Bureau, which uses it to collect information on population characteristics, employment statistics, commercial indices, and other social indicators. Market and advertising research would be impossible without sample surveys. Radio and television ratings; sociological and anthropological studies, that, among other things, influence the distribution of welfare funds; educational progress reports; economic analyses; the climate for military recruiting ef-

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[11] Behavior, Health Risks and Social Disadvantage: Summary of a Conference. Edited by Delores L. Parron, Frederic Solomon, and C. David Jenkins. Institue of Medicine, Washington, D.C., National Academy Press, 1982, 198 p. and Health and Behavior: Frontiers of Research in the Biobehavioral Sciences. Edited by David A. Hamburg, Glen R. Elliott, and Delores L. Parron. Washington, D.C., National Academy Press, 1982. p. 359. (IOM publication 82-010)

[12] Converse, Philip E., Heinz Eulau, and Warren E. Miller. The Study of Voting. *In* McC. Adams, op. cit., 33-75.

[13] For an overview essay, see Reiss, A. J., Jr., Statistical Measurement of Social Change. *In* Five-Year Outlook, op. cit., p. 649-668.

[14] Nelson, op. cit.

[15] Survey Research and Opinion Polls. *In* Only One Science. Twelfth Annual Report of the National Science Board. Washington, U.S. Govt. Print. Off., 1981, p. 82. See also: Bailar, B. A. The Evaluation of Sample Survey Data. Paper presented at the meeting of the American Association for the Advancement of Science, 1979. Referenced in Tornatzky, Louis G. and Trudy Solomon, et. al. Contributions of Social Science to Innovation and Productivity. American Psychologist. July 1982, preprint copy, p. 3. The Tornatzky paper also appears in U.S. National Science Foundation. Emerging Issues in Science and Technology, 1981. A Compendium of Working Papers, p. 37-49. See also: Tanur, Judith M. Advances in Methods for Large-scale Surveys and Experiments. *In* Five-Year Outlook, op. cit., 589-620.

forts; and public health information—all use the data gathered in survey research.[16]

Other industries and professions that draw largely upon behavioral and social research of this nature include "advertising, public relations, and mass media audience measurement services."[17]

There are also contentions that such political science/voting studies as Campbell et al. *The American Voter* and Nie and Verba's *The Changing American Voter* have profoundly changed the methods political candidates use to persuade voters and organize campaigns.[18]

E. Psychophysics

Psychophysics, which studies the relationships between the mental and physical worlds, focuses on how individuals perceive stimuli that cause sensory reations. For instance, Braida, et. al. in the Academy study, described the status of psychophysical research on human sight and hearing and some applications in the design of systems to reduce nighttime driving accidents and the development of reading machines for the blind.[19]

Subliminal communications technology, based on work in psychophysics and cognitive psychology, is being used to help prevent shoplifting and in advertising. It involves projecting information or a message on a TV screen or in music below a conscious threshold of perception. The message lasts only a fraction of a second, and theoretically the receiver does not realize she or he has received the information.[20] Some psychologists have reported research which refutes claims that such procedures affect behavior.[21] Other applications of psychophysics research relate to audition (hearing)[22] and applications in such areas as machine speech synthesis and recognition of speech and sensory aids for deaf and blind persons.

F. Human Factors

Human factors research uses psychology in the design of working environments to maximize efficiency and reduce error in operating systems.[23] Applications in aviation are said to have resulted in

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[16] Only One Science, op. cit., p. 82. and Tornatsky and Miller, op. cit., p. 3.

[17] Nelson, Stephen D. Materials on Psychology's Contributions to National Productivity, American Psychological Association, Memo, Mar. 16, 1981. Quoting an article by Larsen, 1981.

[18] Campbell, Angus, et. al. The American Voter, Chicago, University of Chicago Press, 1976. 573 pp. and Nie, Norman H., Sidney Verba, John R. Petrocik. The Changing American Voter, Cambridge, Harvard University Press, 1979. 430 pp.

[19] McC.Adams, op. cit.

[20] For a recent review, see: U.S. Congress. House. Committee on Science and Technology. Subcommittee on Transportation Aviation and Materials. Subliminal Communication Technology. Hearings. 98th Congress, 2nd sess., Aug. 6, 1984. Washington, U.S. Govt. Print. Off., 1984. 295 p.

[21] See, for example, Vokey, John R. and J. Ron Read. Subliminal Messages: Between the Devil and the Media. American Psychologist Nov. 1985: 1231-1239.

[22] See, for example, Liberman, Alvin, Language processing: State-of-the-art report, *In* Sensory Capabilities of Hearing-Impaired Children, R. Stark, Ed., University Park Press, 1974. Liberman, Alvin, An ethological approach to language through the study of speech perception, *In* Human Ethology, edited by M. von Cranach, K. Foppa, W. Lepenies, and D. Ploog, Cambridge, Cambridge University Press, 1979.

[23] For an overview of human factors applications, see Harris, Douglas H. Human Factors Success Stories. Proceedings of the Human Factors Society. 28th Annual Meeting, 1984. p. 1-5.

considerable airplane and airport improvements which, it has been reported, have saved lives as well as dollars.[24] For instance, a National Academy of Sciences report noted that the number of nighttime accidents involving aircraft landing at an airport near a body of water or an uninhabited desert—a so-called "dark hole"—could be eliminated after research revealed that the "dark hole" caused a visual illusion that caused pilots to misjudge altitude. Once the reason was known, the solution was simple: a requirement that pilots approaching these kinds of airports repeatedly check altimeter readings rather than rely solely on vision." [25]

This work has also been used to improve the design of assembly lines. For example, Nelson cited how human factors engineering led to improvements in: (1) the productivity rates of assembling electronic equipment, because it "resulted in the time required for assembly of a single unit dropping from 76 to 28 minutes"; [26] (2) the development of readable and safer highway signs; and (3) in the design of robots and assessment of organizational changes that might result from increased use of robotics in the workplace. Cognitive psychologists have worked closely with computer scientists to help design computerized systems of artificial intelligence.[27]

Psychologists at the Federal Aviation Administration are credited with developing "behavioral profiles", in 1968 and 1969, to detect potential airplane hijackers, based on techniques of psychometrics that were developed originally in the course of basic laboratory research. They have been credited with enabling airplane personnel to use "a simple, easily applied observational scales . . . to identify high probability hijackers." Reicken claimed this work was effective: "After this 'boarding gate defense' was put into practice (and before the screening-by-hardware was in place) the number of successful skyjackings declined abruptly." [28]

Human factors research appears not to have been used widely in the nuclear power industry. This reportedly, is a significant omission, since, according to the Kemeny Commission that investigated the Three-Mile Island power plant accident in Harrisburg Pennsylvania, it was "people-related problems and not equipment problems" that caused the accident. It has been reported that the Nuclear Regulatory Commission, as a result of the accident, "has shown considerably more interest in such approaches, and has enlisted the assistance of the Human Factors Society to aid in the upgrading of [social and behavioral] elements of nuclear plant design and operation." [29]

G. Behavior Therapy

Behavior therapy, sometimes called behavior modification therapy, draws heavily upon basic research in experimental psychology

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[24] Nelson, op. cit., p. 6.
[25] NAS media advisory, June 21, 1982.
[26] Nelson, op. cit., p. 5. Also, Special Issue on Aviation Psychology, Human Factors, v. 26, no. 5, Oct. 1984.
[27] Nelson, op. cit., p. 5.
[28] Reicken, Henry W. Statement before the Subcommittee on Science, Research and Technology, House Committee on Science and Technology, Hearing on the Authorization for the National Science Foundation, Mar. 12, 1981. p. 6.
[29] Nelson, op. cit., p. 5. See also: Kemeny, John. The Lessons of Three-Mile Island. Technology Review, June/July 1980.

and learning theory. To the layman, work in this area is perhaps the most visible type of psychological applications. The National Academy of Sciences summarized some recent advances and applications in treating a range of emotional and behavioral disorders, including fear reduction techniques to treat anxiety disorders, positive reinforcement of preferred behavior in mentally ill patients, and techniques of self-control, or biofeedback, to help people induce desired behavioral changes.[30]

H. Organizational and Industrial Behavior

Psychological and sociological studies of authority, participation, and decisionmaking within organizations have been cited as resulting in marked improvements in productivity and efficiency in some industries. Some of these are documented in the study *The Change Masters* by Rosabeth Moss Kanter.[31] William Foot Whyte's work in such areas as employee ownership and worker cooperatives are often cited as having improved productivity in the manufacturing[32] and agriculture sectors.[33]

Guest's research on ways to alleviate worker alienation and improving leadership are examples of studies which are intended to help improve industrial innovation and productivity.[34] Nelson has described some of these applications. For example:

> An . . . impressive demonstration of the practical benefits of greater employee participation and decisionmaking occurred when one company acquired another of similar size, age, product line, and structure, (the former being essentially participative, and the latter being more conventional and authoritarian). The acquiring company attempted to implement its structure and managerial practice in the acquired firm, and after two years the return on investment in the latter company had gone from minus 15 percent to plus 17 percent, productivity had increased from minus 11 percent to plus 14 percent (compared to a standard of expected production), absence and turnover were cut in half, and hourly earnings increased 26 percent. . . . A followup study conducted eight years later showed that these favorable effects had held up over the years.[35]

There is also some evidence of positive results by American firms, which have begun to utilize the effective Japanese experiences with quality control circles—a participatory management

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[30] Wilson, G. Terence. From Experimental Research to Clinical Practice: Behavior Therapy As A Case Study. *In* McC. Adams, op. cit., 554-602.

[31] Kanter, Rosabeth M. The Change Masters: Innovations for Productivity in the American Corporation. New York, Simon and Schuster, 1983. 432 pp.

[32] Whyte, William F. Money and Motivation. New York, Harper, 1955. 268 pp.; Men at Work. Homewood, Illinois, Dorsey Press, 1961. 593 pp.; and Worker Participation and Ownership. Ithaca, New York, ILR Press, 1983. pp. 152.

[33] Whyte, William F. Participatory Approaches to Agricultural Research and Development. Ithaca, New York, Rural Development Committee, Center for International Studies, Cornell University, 1981. 111 p.; Higher-yielding human systems for agriculture, Ithaca, Cornell University Press, 1983. 342 pp.; Learning from the Field. Beverly Hills, Sage Publ., 1984. 295 pp.

[34] Guest, Robert H. Organizational Change Through Effective Leadership. Englewood Cliffs, N.J., Prentice-Hall, 1977. 184 pp. and Walker, Charles R. The Man on the Assembly Line. Arno Press, 1979. 180 pp.

[35] Nelson, op. cit., p. 10.

technique based, in large part, on research conducted by an American, W. Edwards Deming, dealing with statistical methods of quality control and with social science research of the 1940s and 1950s on worker participation. Nelson reported some quantitative results:

> Lockheed Missile and Space Company in 1974 was the first U.S. firm to introduce quality control circles. The result, according to one researcher, was that defects declined by two-thirds, worker morale and job satisfaction improved and the company estimated the program had saved it $3 million by 1977. Many other U.S. firms have tried this concept since then, and although cost-benefit data on the effects of the programs is proprietary information and therefore not public, researchers familiar with most of these experiments reports them to be on the order of between 5-to-1 and 15-to-1 returns.[36]

Additional work and implications of this area were reviewed in hearings and a report of the "Human Factor in Innovation and Productivity," by the Subcommittee on Science, Research, and Technology of the House Committee on Science and Technology, 1982.[37]

There is also some literature which concludes that the failure of many programs, including the development of technological innovations and the effectiveness of social programs, is attributable to the fact that the adoption of an innovation often depends on the activities that occur "after initial adoption or purchase (during implementation) [and] have much more to do with whether an innovation is successfully used than preadoption activities."[38] The implication is that managers should not develop a policy without first ensuring adequate follow-through and an environment conducive to the adoption of the innovation. It is widely acknowledged, for example, that: "the superior economic performance of Japanese industry is not entirely attributable to superior innovation in the technological sphere. Much of this success has been attributed to superior organizational and management techniques."[39] It has been suggested that the U.S. lag in adopting R&D information developed in this country cannot be improved unless more attention is given to "understanding and manipulating the social factors which largely determine the rate and success or failure of innovations as well as their ultimate diffusion."[40]

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[36] Nelson, op. cit., p. 11. See also Cole, R.E. Work, Mobility and Participation: A Comparative Study of American and Japanese Industry. Berkeley, University of California Press, 1979.

[37] U.S. Congress. House. Committee on Science and Technology. Subcommittee on Science, Research and Technology. Subcommittee on Science, Research and Technology. The Human Factor in Innovation and Productivity. Including an Analysis of Hearings on the Human Factor. Prepared by the Congressional Research Service. 97th Cong., 2nd Sess., Washington, U.S. Govt. Print. Off., 1982. 40 p. (Committee print.)

[38] Tornatzky and Solomon, op. cit., p. 7, citing Pressman, J. and Wildavasky, A. Implementation. Berkeley, University of California Press, 1973 and Yin, R.K., Quick, S.K., Bateman, P.M. and Marks, E.L. Changing Urban Bureaucracies: How New Practices Become Routinized. Santa Monica, Rand Corporation, 1978.

[39] Farina, Chummer and Michael Kelly. Innovation Policy and the Social Sciences. Policy Studies review, v. 3, no. 1, Aug. 1982: 24.

[40] Ibid., p. 25.

I. Modeling

Some firms have used linear programming methods to conduct inventory controls and econometric analysis in investment decisionmaking. "For example," explained Tornatzky and Solomon:

> when deciding whether to construct a new plant or to pump oil from a spot where operating costs will be more expensive than their existing wells, . . . firms use econometric techniques to estimate the future market prices and quantities for their product. This kind of econometric analysis results in profit estimates under various future conditions, and if the estimates are favorable, the firm invests."[41]

There are also studies of how social science has contributed to the development of American agriculture and marketing,[42] and of how Federal agencies use demographic information, developed by sociologists and demographers, in micro-models, to simulate problems in program implementation. For instance, according to a 1981 news release by Cornell University:

> The Department of Agriculture tests Food Stamp Program changes on a micro-model to estimate which groups will gain, which will lose, and how much the change will cost. The Congressional Budget Office uses a micromodel to project the total costs of transfer payments over the next 15 years. The Social Security Administration explores the implications of revised public and private pension policies on a micro-model. Alternative energy pricing policies are tested on a micro-model by the Department of Energy. All these tests depend on the behavioral assumptions in the model.

J. Databases

The development of socioeconomic databases has been credited with advancing commerce as well as science. During testimony before the House Task Force on Science Policy, Nobel Prize winning scientist Herbert Simon said social science information, much of it in the form of databases, plays an essential role in our everyday lives, one we often take for granted. He concluded:

> We cannot pick up a newspaper without being confronted with facts about the age distribution of our population, trends in disease and mortality, the level and distribution of its income. . . . These and other social science data inform us about the world in which we live, shape our views and social attributes, alert us to problems, affect the ways we raise our children, manage our cities, regulate the economy.[43]

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[41] Tornatzky and Solomon, op. cit. p. 4.
[42] Deavers, Kenneth L. Social Science Contributions to Rural Development Policy in the 1980s. American Journal of Agricultural Economics, v. 62, Dec. 1980: 1021-1026.
[43] Testimony of Herbert A. Simon. Before the House Committee on Science and Technology, Sept. 17, 1985, p. 3.

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The economic and social data developed by economists and other social scientists are used routinely by a wide variety of Federal agencies, with applications in administrative rate setting, social services delivery, and fiscal and monetary policy. Examples of agencies which use such databases include: Council on Wage and Price Stability, Council of Economic Advisors, Federal Reserve, Treasury Department, Office of Management and Budget, and Social Security Administration. The National Science Foundation has supported the methodology and conceptualization of some of these efforts. According to Reicken NSF-funded work in this area is

> used to develop and test social and behavioral measurements techniques and mid-range theories of societal functioning. Data archives like these really serve two main purposes; they economically (by sharing access) extend the empirical base available to the individual investigator; and they provide both analysts and decision-makers with current information of relevance to public policy.[44]
>
> It was the idea of establishing, fifty years ago, and continuously collecting serial data on economic performance, according to Reicken, that made it possible to have the economic indicators on which so many economic policy decisions rest today. Economists use these same serial data for research. . . .[45]

There are underway similar efforts to develop longitudinal archives of social data, to provide social indicators, that is, "dependable quantitative signals about changes in the way our society is functioning." The National Science Foundation and the Social Science Research Council supported work in this direction. The popular press has also become involved in these efforts. It has been reported, for instance, that the newspaper USA Today began publishing a "comprehensive quality of life index" for the United States in its March 11, 1985 issue. It is reported to be a composite of 21 indicators developed by Dr. Dennis F. Johnston, a social indicators expert who formerly developed social indicators while employed by the Federal Government at the Department of Commerce and the Office of Management and Budget. The composite consists of data representing several critical areas: health, public safety, education, employment, earnings and income, poverty, housing, family stability and equality.[46] (For additional information about attempts to institutionalize the collection of social indicators in Government, see chapter II in this report.) There is some evidence that multinational firms are employing behavioral and social scientists in increasing numbers to do risk analysis. These studies analyze the political, economic, cultural and social events in countries around the world to provide information used in making corporate investment decisions.

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[44] Reicken, Testimony, Mar. 12, 1981, op. cit., p. 10.
[45] Ibid., p. 10.
[46] USA Today Publishes U.S. Quality of Life Indices. SINET: Social Indicators Network news, Spring, May 1985: 1.

K. Use of Behavioral and Social Research Terminology by the Public

There are also numerous examples of how the public has come to use social and behavioral research terminology in daily speech and activities. The public commonly uses a number of concepts, which have special meaning to social scientists, since they are a shorthand way of describing an issue and its features. Many of these terms, according to the National Academy of Sciences, have ". . . meanings [which] have moved from the common language to social science, which then have returned to ordinary use bearing the special meanings that social sciences has fixed them with," through a process called "labelling." This is a process whereby social scientists "label human activities, processes, or events so that they can bound and isolate their subject for study." This process also has utility for public policymaking, according to the Academy, since "by identifying issues and highlighting their most generalizable, salient features by giving them names, social scientists. . . ." can detach a current issue from some of its controversial context and emotionalism and "assist the public in thinking through its position on alternative solutions to social problems." [47]

One of the the most common terms of this sort is "self-fulfilling prophecy," a concept widely used in common language, whose origin has been attributed to Robert Merton, a sociologist.[48] A self-fulfilling prophecy may be defined as a false belief that is shared widely, but it tends, over time, to become true as people act as if it were true. Such complex social problems, as racism, anti-Semitism, and other forms of prejudice, according to Merton, are prolonged because of self-fulfilling prophecies.[49]

Other concepts, originated by social scientists to categorize and study particular social phenomena and now in common usage, include minority group, youth culture, ethnocentrism, charisma, socialization, and stereotype,[50] fiscal policy gross national product (GNP), identity crisis, the unconscious, and externalities.[51] Related concepts are: depression, inflation, human capital, the hidden economy, reference group, status, standard of living, quality of life, sample, acculturation, socialization, alienation, unemployment, juvenile delinquency, stagflation, caste, and "culture of poverty."

L. Other Applications of Behavioral Research

Psychological or behavioral research has many other technical and adminstrative applications. For example, cognitive psychology is influential in designing curricula and instructional methods.[52]

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[47] Ibid., p. 89.

[48] Introduction. *In* Robert K. Merton. Social Research and the Practicing Professions. Edited and with an Introduction by Aaron Rosenblatt and Thomas F. Gieryn. Cambridge, Abt Books, 1982, p. xv.

[49] The Self-Filfilling Prophecy. The Antioch Review, Summer, 1948: 193-210. Reprinted in Social Research and the Practicing Professions, op. cit., 248-267.

[50] Social Research and the Practicing Professions, op. cit., pp. xii-xiii.

[51] Prewitt, Kenneth. Usefulness of the Social Sciences. Sciences, v. 211, Feb. 13, 1981: editorial.

[52] Gardner, Michael K. Cognitive Psychological Approaches to Instructional Task Analysis. In Review of Research in Education, Edmund W. Gordon, ed., American Educational Research Association, Washington, D.C., 1985.

Experimental psychology has contributed to the development of teaching and training methods. Psychological research findings have also been applied to criminal justice related programs for children,[53] and to such other areas as determination of competence to stand trial and the insanity defense, expert testimony and the use of polygrams, that is, lie detectors.

M. Contribution of Behavioral and Social Sciences to Understanding in the Physical and Natural Sciences

There also is the contention that the behavioral and social sciences have contributed to understanding in the physical and natural sciences and that they are are part of a continuum, but perhaps at the more complex level, of the same kind of scholarly pursuit that is represented by the biological and physical sciences. This point was vividly discussed by Philip Morrison, a physicist, in a 1982 National Academy of Sciences publication:

> The very enterprise of a scientific description of the natural world leads directly to the necessity of the social and behavioral sciences. At the eyepiece of the telescope there is a human eye; on the layered strata of the riverbank may be found the flint tools and hearths of prehistoric campsites; the society of bees both forces and gains from a reflective look at the very different society of the entomologist. It does not seem possible to draw any clear line between the scientist looking out at the physical or biological world and another kind of scientist concentrating instead on his or her own species.
>
> As research proceeds it has become ever clearer that the functioning of the eye in terms of its human significance has only a few elementary principles in common with the functioning of a camera. It is instead a complex input device to a computing system more intimately connected to its past than anything constructed in a laboratory. Regularities are discovered in the distribution and cultural composition of ancient campsites, but once again different from those of the coexisting plant and animal communities or of the river deposits that in time covered them. Similarly, it has become clearer and clearer that rules of behavior enforced among bees by transfer of phermones are secured among humans by a much richer flow of meanings and symbols—grammar, eye contact, flag. This implies simply that the natural sciences must be extended in the same spirit, across what a physical scientists would describe as a phase change, to the study of the extraordinary qualities of the species *Homo sapiens* and its richly diverse works.[54]

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[53] See, for example, Patterson, G. R., Intervention for Boys with Conduct Programs: Multiple Settings Treatments, and Criteria, Journal of Consulting and Clinical Psychology, 1974, 42, 471-481.

Patterson, G. R., The Aggressive Child: Victim and Architect of a Coercive System, In L. A. Hamerlynck, L. C. Handy, and E. J. Mash (eds.), Behavior Modification and Families: Theory and Research, v. 1, New York: Brunner/Mazel, 1976.

[54] Committee on Basic Research in the Behavioral and Social Sciences. Behaviorial and Social Research: A National Resource. Part 1. Washington, National Academy Press, 1982, p. vi-vii.

The contributions of the behavioral and social sciences to improvements in the practice of applied professional fields—such as medicine, law, and business—and to the progress of other sciences, especially "hard" sciences, was noted by the National Academy of Sciences in a 1982 report by its Committee on Basic Research in the Behavioral and Social Sciences:

> . . . The social and behavioral sciences provide the research underpinning for all or part of several applied fields. In medicine psychosocial factors are now strongly implicated in the etiology of some disease and disorders and in the efficacy of treatment . . . The legal profession has increasingly engaged in and been influenced by social science research on the impact of regulatory laws and agencies, laws against pornography, the interaction between the incidence of crime and patterns of arrest, trial, and punishment, and the behavioral and social sciences provides much of the empirical base for the practices and principles promulgated in schools of business, education, urban planning, public health, international affairs, public administration, and social welfare. And research in these fields often contributes to the stock of basic knowledge. Finally, many fields of study—mathematics, statistics, and computer science, for example—have been stimulated by research questions in the social and behavioral sciences to develop particularly suitable models, methods, and techniques.[55]

There are also other illustrations of cross-fertilization between the natural and social sciences. For instance, cognitive science has developed from inquiries about how to invent a "thinking computer." The steps the human brain uses to organize information to solve problems had to be identified. This has led not only to developments in information sciences, but also to applications in behavior, with the development of compensatory learning programs for individuals with brain disorders, such as dyslexia.

The recognition of the interface between the behavioral and social sciences, on the one hand, and the physical and natural sciences, on the other, is also illustrated, for instance, by the work of the Social Science Research Council's Committee on Social Indicators' Subcommittee on Science and Technology Indicators.[56] There is also a growing interdisciplinary field of social impact assessment, developed, in part, to generate understanding and data to respond to the need for environmental impact assessments mandated by the National Environmental Policy Act of 1969.

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[55] Ibid., p. 7.

[56] See: Social Science Research Council Annual Report, 1983-1984. New York, Social Science Research Council, 1984, p. 111-124.

X. ISSUES IN THE UTILIZATION OF BEHAVIORAL AND SOCIAL SCIENCE RESEARCH IN POLICYMAKING

A. Introduction

It was pointed out in the previous chapter that the Task Force asked the Congressional Research Service to evaluate issues relating to the utilization of research results from the behavioral and social sciences in private and public decisionmaking. The discussion in chapter IX indicated that such evaluations must take into account not only the kind of information, but also the intended use. Examples were given of the use of behavioral and social science information in technical, administrative, and clinical settings, where decisions do not involve public policy and where scientists are not concerned necessarily about public policy applications of their research. Knowledge application of this sort usually is not difficult to trace and generally is perceived as effective.

Assessment of the utilization of behavioral and social science information, or, indeed, any kind of natural or physical science information, in public policymaking is a complex undertaking. An examination of knowledge application and use of behavioral and social science implies understanding of what knowledge is; the institutional changes which demonstrate use; the variety of roles played by experts in decisionmaking; and the dynamic, multiple kinds of information which influence the many critical points in political decisionmaking.

Science is observational, objective, slow, and inferential. Scientific facts are validated by testing hypotheses (eliminating alternative explanations for the occurence of the phenomena), and by consensus generation. This has been characterized as a "rational" process. Policy decisionmaking in the United States, on the other hand, is a process that consists of "incremental" actions at many different points and by many different "actors," including appointed and elected officials, as well as lobbyists or advocates, whose activities (which may encompass the use of scientific information) may influence what decisionmakers do. Behavioral and social science information—whether delivered by experts in testimony before decisionmaking bodies, presented as data from a database, or published in a professional paper, journal or book—may affect any point in the sequence of events leading to a decision. Furthermore, political decisionmaking is "irrational"—or not based wholly on objective information—to the extent that political choices are based on a complex set of factors including facts, values, distributive effects and political judgments of the public good."

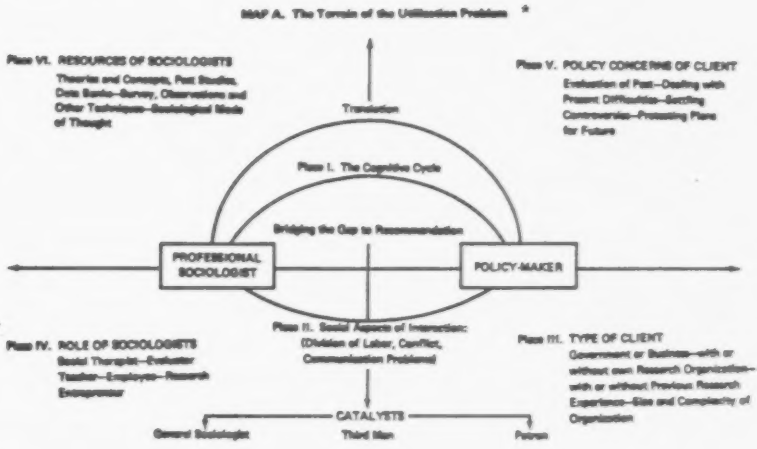
There is a considerable body of knowledge about research utilization in the behavioral and social sciences that gives partial explanations of how these sciences may or may not be useful in decisionmaking. This literature illustrates the dilemmas which confront be-

havioral and social scientists seeking to maximize the use of research findings in public policy. There are a variety of often conflicting factors—many of them are not subject to the control of scientists—which affect utilization. Knowledge theorists, for example, have pointed out that sometimes research information is intended to be used only in additional research, not prematurely in decisionmaking. Thus to judge the worth of research on the basis of use is to look only at one subset of the full value of these fields. Psychologists have examined the cognitive aspects of knowledge utilization—defining what information is and how to maximize sending and receiving messages. They have discovered that knowledge is not used in a linear fashion, because problems have multiple causes, solutions, and action decisions. Knowledge will not be used merely if it is "good research." Knowledge transmission requires a sender and a receiver. In policymaking that may mean social and behavioral scientists need to be involved in some fashion in the policymaking process. But that may be insufficient to guarantee direct use, or even an obstacle to use. Political scientists have looked at decisionmaking—the flows of influence, identification of power centers, utilization of knowledge as power, and the irrationality of decisionmaking. Sociologists have studied such other aspects of knowledge use as organizational behavior and how the configuration and environment of an organization affect its use of behavioral and social science information—for instance, that most policymakers prefer scientists to be neutral and objective and not to recommend policy or to usurp the decisionmaking functions of elected or appointed officials.

Generally these studies of knowledge utilization show that behavioral and social science information probably is used most effectively in policymaking as part of a cumulative process—often occurring over several years—of "enlightening" an opinion maker, ordinary concerned citizen, or a decisionmaker, but not necessarily as an identifiable component of a specific decisionmaking sequence leading to programs or policies. Knowledge utilization, according to this approach, is judged effective if it helps set the frame of reference for discussion, delimits options, and puts boundaries around the debate. (The "enlightenment model" will be discussed in greater detail in section D of this chapter.) They have also shown that behavioral and social facts are time and value-dependent, that social and political consensus, as well as scientific validity, are needed to ensure utilization, and that utilization can be both symbolic and instrumental. Inconclusive research may be used just as verified research, depending upon the user and his or her needs. (It can be hypothesized that these same factors may affect the use of natural and physical sciences information, but that they may be more burdensome to the behavioral and social sciences because the subject matter of study is human beings whose behavior is inherently more irregular and difficult to study than are physical and natural science phenomena. See Chart H for a portrayal of the utilization process.

This analysis of utilization begins with illustrations of the effective applications of behavioral and social science research findings in policymaking. It then moves on to examine obstacles to effective utilization. As the Task Force requested, case studies are described

throughout the chapter to illustrate the points made. Chapter XI contains recommendations made by policymakers and scientists to enhance utilization of behavioral and social research in decision-making.


MAP A. The Terrain of the Utilization Problem *
Phase VI. RESOURCES OF SOCIOLOGISTS
Theories and Concepts, Past Studies, Data Banks—Survey, Observations and Other Techniques—Sociological Mode of Thought
Translation
Phase V. POLICY CONCERNS OF CLIENT
Evaluation of Past—Dealing with Present Difficulties—Settling Controversies—Processing Plans for Future
Phase I. The Cognitive Cycle
Bridging the Gap to Recommendation
PROFESSIONAL SOCIOLOGIST
POLICY-MAKER
Phase IV. ROLE OF SOCIOLOGISTS
Social Therapist—Evaluator
Teacher—Employee—Research Entrepreneur
Phase II. Social Aspects of Interaction: (Division of Labor, Conflict, Communication Problems)
Phase III. TYPE OF CLIENT
Government or Business—with or without own Research Organization—with or without Previous Research Experience—Size and Complexity of Organization
CATALYSTS
General Sociologist
Third Man
Patron

* Source: Lazarsfeld and Reitz, op. cit., p. 41.

CHART H

B. EXAMPLES OF UTILIZATION IN POLICYMAKING

There are many illustrations of the utilization—usually in a cumulative fashion—of social and behavioral information in policymaking. One can cite for example, the widespread, diffuse, and often almost subliminal influence on the ways most people in general and especially decisionmakers think and the options they evaluate of political philosophers and economic thinkers from Plato, through Machiavelli, Adam Smith, Marx, and Keynes. Some early post-World War II illustrations of how the Government deliberately used the accumulated findings of these disciplines are chronicled in the report *Effective Use of Social Science Research in the Federal Services,* by the Russell Sage Foundation in 1950. Other examples appear in a National Academy of Sciences report, *Behavioral Sciences and the Federal Government,* published in 1969, and in a series of investigations by the Subcommittee on Research and Technical Programs of the House Committee on Government Operations. This latter report lists, for instance, psychological and social sciences work done by Samuel Stouffer, shortly before the beginning of World War II, which led to the development of morale building measures and revised personnel selection and training

policies.[1] It also includes information on public opinion studies, which were used by various Federal agencies, including the Forest Service and other parts of the Agriculture Department, since at least 1940, in connection with land management policy. Other illustrations include the considerable historical record of research on rural welfare and migration to urban areas, conducted by sociologists and economists affiliated with agricultural experiment stations in the 1930s.[2] Often cited as an example of effective utilization is the study *The Chrysanthemum and the Sword: Patterns of Japanese Culture,* by Ruth Benedict,[3] which it is claimed, expanded Westerners' understanding of Japanese culture, and which appears to have had significant impact on the course of post World War II U.S. policies toward Japan.

There are also notable examples of institutionalized patterns of using the social and behavioral sciences in Government. These include the creation of socio-economic databases, such as those relating to prices, GNP, demographic trends, and unemployment rates, which have enabled decisionmakers to monitor changes in policy-relevant issue areas. Econometric modeling has been widely used to help determine government tax and spending policy decisions. Other forms of institutionalization are reflected in the establishment of the Council of Economic Advisors in 1946, to advise the President on economic conditions and policies, and the creation of the Congressional Budget Office and the Institute for Program Evaluation, at the General Accounting Office in 1974 to provide Congress with better economic and evaluation information for use in decisionmaking.

In their study *Why Sociology Does Not Apply,* Scott and Shore cited several illustrations of how sociological research studies have influenced national policymaking. For instance:

> [T]he involvement of sociologists such as Cloward and Ohlin (1960) in social action programs to combat juvenile delinquency, to reduce school drop-out rates and to prevent narcotics addiction . . .; studies by demographers of population growth and the migration of people in the United States—information said to have provided the basis for "long-range planning by many of the most important sectors and institutions in American society" . . . and sociological research on "talent loss: as a result of inadequate educational opportunities for persons of low socioeconomic status, findings that led to the enactment of remedial measures such as: the expansion of state unversities, the establishment of new scholarships and loan resources, the creation of Federal programs like Upward Bound, Talent Search and Vista." [4]

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[1] In U.S. Congress. House. Committee on Government Operations. Research and Technical Programs Subcommittee. The Use of Social Research in Federal Domestic Programs. (Part III—The Relation of Private Social Scientists to Federal Programs on National Social Problems) A Staff Study. 90th Cong., 1st Sess. Apr. 1967. Washington, U.S. Govt. Print. Off., 1967. p. 435.

[2] Ibid., p. 475–483.

[3] Benedict, Ruth. The Chrysanthemum and the Sword: Patterns of Japanese Culture. Boston, Houghton Mifflin Co., 1946. 324 p.

[4] Scott, Robert A. and Arnold R. Shore. Why Sociology Does Not Apply: A Study on the Use of Sociology in Public Policy. New York, Elsevier, 1979.

Cost savings generated from applications of behavioral and social research are difficult to quantify since they consist of costs which have been avoided.[5] However, examples have been cited of social experiments and related research which, if they were to be applied, or, which having been applied, appear to have resulted in considerable cost-savings. Social experiments are used to field test the efficiency and effectiveness of major program designs before widespread implementation. For instance, Scott and Shore cited a controlled experiment by Zeisel and other sociological researchers that demonstrated that many judicial cases could be settled during pretrial conferences, saving the costs of going to trial and reducing the costs of trial loads.[6] Another example cited was a study "of bail bond procedures by the VERA Institute of New York [that] showed that the number of defendants released without bail could be quadrupled without reducing their availability at the time of trial."[7]

During hearings held by the Task Force on Science Policy in September 1985, several witnesses testified about the cost savings in public expenditures afforded by using applied social science. According to Clark C. Abt, President of Abt Associates, a consulting firm:

> Spending for applied social sciences research during the past two decades has consumed only 8 cents out of every $100 of the budgets of federal agencies. If this small level of spending on research improved the effectiveness of the remainder of Federal budgets of only one percent, it produced in excess of a tenfold return.[8]

He cited as examples of research which saved money the "Housing Demand Experiment," "The National Day Care Study," and a study of "Hospital Prospective Reimbursement Studies." He also said that he believed that appropriate social program experiments were not being conducted in the areas of greatest expenditures of Federal funding, such as health, education, and environmental quality.

Along the same lines, Joseph P. Newhouse, head of the Economics Department of the Rand Corporation testified about the savings in health care costs which have resulted from transferring the results of a health insurance social experiment to a wider group. Funded by the Office of Economic Opportunity and the Assistant Secretary for Planning and Evaluation at the Department of Health and Human Services at the cost of about $80 million since 1981, it showed that families who paid more for medical services (via lower deductibles on insurance) sought less medical care than families who paid less, but their quality of health care did not change. As a result of these findings, several large firms increased the amount of cost-sharing required by their employees in compa-

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[5] Alberts, Walter, Jr. Utilization of the Social and Behavioral Sciences by Industry. Statement before Task Force on Government Science Policy. House Committee on Science and Technology, Sept. 18, 1985.

[6] Scott and Shore, op. cit., p. 25.

[7] Ibid., p. 26.

[8] Abt, Clark C. Improving Government Efficiency With Social Sciences Research. Uses of Social Sciences R&D by Government and Industry, and Federal Support of the Social Sciences. Testimony to the Committee on Science and Technology, U.S. House of Representatives, Sept. 18, 1985. p. 3.

ny-funded medical plans. According to Newhouse, this requirement saved an estimated $7 billion in health care costs in 1983.[9]

Two researchers affiliated with the National Science Foundation have described the importance of two other controlled social experiments. They reported that: "A prime example is the New Jersey guaranteed annual income experiment in which program evaluation techniques were used to assess a variety of social welfare initiatives in the late 1960s. Millions of tax dollars were saved by using the results of this research. Similar experimental studies have been conducted in such disparate areas as criminal justice, mental health, and education, with significant long-term effects on policy." [10]

A recent assessment of the social sciences in the United States underscored that this Nation is a net exporter of social science knowledge to other countries because of the comparative advantage afforded by the development of quantitative research methods in this country (in contrast to the philosophical qualitative orientations of social science in other nations):

> The distinctiveness and preeminence of American social sciences are in part due to their adherence to the norms and origins of science as opposed to a preoccupation with social philosophy. In contrast to its development in other nations, American social science has to a large extent been pragmatic, quantitative, and heavily involved in the development and use of rigorous research methodologies.[11]

There is also a widely expressed view that most societal problems—especially those involving the applications of technology require better understanding of human behavior. For instance, according to John B. Slaughter, former director of the National Science Foundation:

> As we look at the array of problems confronting our Nation and the world, it is quickly apparent that a common thread is the [view, as expressed by Philip Handler, former President of the National Academy of Sciences] "that man's activities are determinants in what the earth is and may be." The long-term solutions to the energy shortage, productivity, new technology, and processes of innovation cannot be addressed without considering the individual and social context. Even in the way scientific research itself is conducted and organized and how scientific findings are adopted and utilized, there is an indispensable human factor. Without understanding social and behavioral effects more thoroughly, we will not be

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[9] Newhouse, Joseph R. Experimentation as Part of a Social Science Research Strategy. Testimony before the Subcommittee on Science, Research, and Technology, House Committee on Science and Technology, Sept. 18, 1985. p. 3.

[10] Tornatzky, Louis, G. and Trudy Solomon. Contributions of Social Science to Innovation and Productivity. American Psychologist, v. 37, July 1982, preprint. Kershaw, D. and J. Fair. The New Jersey Income Maintenance Experiment. v. 1. Operations, Surveys and Administration. New York, Seminar Press, 1976 and Boruch R. Bibliography: Randomized Field Experiments for Planning and Evaluating Social Programs. Evaluation, 1974, v. 2. pp. 83-87.

[11] Tornatzky and Solomon, op. cit. p. 2. See also Sckopol, op. cit., passim.

able to accomplish the task of revitalizing our society, no matter what technological innovation may be found.[12]

C. Criticisms About the Utilization of Behavioral and Social Research in Policymaking

1. OVERVIEW

Despite these illustrations of use, critics, including many behavioral and social scientists, have complained about the lack of utility of behavioral and social research in policymaking. This view was expressed, for instance, in a 1978 report of the National Academy of Sciences:

> There are indications . . . that dissatisfaction with the usefulness of social R&D is not abating. For example, the Federal Council for Science and Technology Task Group on Social R&D noted that there are indications that too little social R&D is relevant to policymaking and that too much research, even if relevant, is not available to and utilized by the appropriate decisionmakers. A 1976 National Research Council review of the National Science Foundation's applied social science research concluded: "the quality of the work is highly variable and on average relatively undistinguished, with only modest potential for useful application." In general, social R&D continues to be criticized by members of Congress, executive-branch officials, and social scientists because it is neither good nor well-managed research and has little potential for use.[13]

This view was also expressed in a 1977 General Accounting Office report entitled: *Social Research and Development of Limited Use to National Policymakers.*[14]

Otto Larsen, a sociologist and senior advisor on social and behavioral sciences at the National Science Foundation, in a statement designed probably to motivate the research community toward making serious priority choices, recently commented pessimistically:

> Many, I believe, (myself included) have been too optimistic about the progress of social science. . . . American social science research has a precarious support base, has made very little progress in legitimating its scientific status, and confronts a serious collective, intellectual challenge bearing on the use and control of knowledge. Over a thirty-year history there have gains, but some are illusory, and others have been offset by losses.[15]

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[12] Testimony of John B. Slaughter, NSF Director, before the Subcommittee on Science, Research and Technology, House Committee on Science and Technology, Mar. 12, 1981. p. 6.

[13] Lynn, Laurence E., Jr. Introduction. In Knowledge and Policy: The Uncertain Connection. Washington, National Research Council Study project on Social R&D, v. 5. National Academy of Sciences, 1978. p. 5.

[14] U.S. Comptroller General. Social Research and Development of Limited Use to National Policymakers. Department of Health, Education, Welfare and Other Federal Agencies. Apr. 4, 1977. pp. HRD 77-34.

[15] Larsen, Otto N. Social Science Out of the Closet. Society. Jan-Feb. 1985. p. 12.

In fact, Larsen said, many critics—policymakers and scientists alike—question whether the social sciences really are sciences:

> . . . [S]ocial science today is held in the same disesteem that marked its beginning. Fundamentally, there has been no change in the way in which social science is understood by the dominant figures from physics, engineering, chemistry, and mathematics. . . . It is not just that social sciences are deemed "soft"; rather, it is a genuine skepticism about whether they are sciences at all.[16]

2. QUESTIONS ABOUT EFFECTIVE USE IN PRESIDENTIAL COMMISSIONS

Presidentially appointed commissions were created, especially during the 1960s, to find the causes and suggest the cures for major social problems. Social scientists have often been asked to play major roles in the commissions, by providing information to commission members. Some researchers believe that social science information has been used effectively in commission work and that the major obstacle to use comes from rejection of a commission's recommendations because they are too controversial and lack "powerful and permanent advocate[s]." [17] However, other researchers are less sanguine and believe that such information or methods may contribute to the recommendations, but not to the impact of the commissions or the policies eventually enacted.[18] There is also the belief that commission-generated sociological information has been used only if participating scientists had the necessary skills and ability to bargain in the political arena.[19] For instance, James Q. Wilson, a social scientist with extensive experience working for the Government, reported to the National Research Council of the National Academy of Sciences in 1978 that ". . . Public commissions, on the record, have either made no use of social sciences (the Kerner Commission), made some use but in ways irrelevant to its policy conclusions (the violence commission), or made use of relevant but unconvincing and inadequate research (the obscenity commission.) [20]

D. A Model of the Way Behavioral and Social Science Information Is Used Most Effectively in Decisionmaking

1. "SOCIAL ENGINEERING" OR ENLIGHTENMENT?

Some researchers contend that behavioral and social science information can be used effectively in decisionmaking in a "social engineering" mode (that is, social information makes a linear, visible, and direct impact on a decisionmaker and on public policy) and

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[16] Idem.

[17] Seashore Louis, Karen and Robert J. Perlman. Commissions and the Use of Social Science Research: The Case of Safe Schools. Knowledge: Creation, Diffusion, Utilization, v. 7, Sept. 1985. p. 59.

[18] Scott and Shore, op. cit. p. 16, 28.

[19] Ibid., p. 22.

[20] Wilson, James Q. Social Sciences and Public Policy: A Personal Note. In National Academy of Sciences. Knowledge and Policy: The Uncertain Connection. Study Project on Social Research and Development, v. 5, op. cit. p. 85.

that this model should be used to judge utility.[21] The prevailing view, however, seems to be that this model of utilization is inappropriate or too grandiose. Most observers say it is wrong to expect social science information to be used directly and discernably—in a social engineering model—in public policy decisionmaking.[22]

Two factors explain why direct utilization of the "social engineering" model may be circumscribed. One is the complex, dynamic, and, above all, political nature of policymaking. A leading knowledge theorist, Carol H. Weiss, explained this as follows in report for the National Academy of Sciences:

> The policy world is a complicated arena in which previous knowledge and experience abound and each new study has to be fitted into existing views of the world. Moreover, a large number of people, all with their individual theoretical and informational perspectives, are involved in making and implementing any decision, and their differences have to be resolved through the give-and-take of negotiations. There is a plethora of divergent interest groups with a stake in the policy outcome, groups whose remuneration, reputation, and advancement hinge on an appropriate decision.[23]

A second factor is the relatively limited knowledge base in these fields and the inability of these sciences to contribute materially to critical aspects of policymaking. On these points Weiss wrote:

> Social scientists often have grandiose expectations, perhaps tainted with self-interest, of the potential effects of social research on policy. While Government officials are favorably disposed to social sciences, they tend to use social science concepts and findings at modest levels. One reason is that the knowledge base in the social sciences is modest, and reliance on it has not been demonstrated to improve the wisdom of public decisions. It may be that the expectations of social scientists are too high, that immediate and direct use is expected when partial and second-order use is reasonable. The passage of social science

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[21] See for example, Seashore, Louis and Perlman, op. cit. p. 59.

[22] See, for example, Weiss, Improving the Linkage. op. cit. p. 78. Others have outlined criteria of utilization of knowledge in policymaking that place these two functions (that is "social engineering" and "enlightenment") as almost two end-points on a continum of use. For instance, the National Academy of Sciences in its final report of the Study Project on Social Research and Development developed the following "tests" of policy relevance for behavioral and social research, based on the variety of uses illustrated by several cases discussed in the report:

Have the findings of this research helped to solve the problem to which it is directed?

Have the findings of this research been incorporated into social policies or programs intended to ameliorate the problem?

Have the findings of this research been analyzed and discussed by someone influential in the policy process?

Are the findings of this research potentially relevant to a current policy debate?

Are the findings of this research potentially relevant to future policy debates?

Has this research shed light on the nature of a social problem or condition or on how society or its members function?

Has this research contributed to the formulation, design, and conduct of other research, the findings of which will be helpful in the making of current or future policy?

Does this research advance an intellectual discipline that may help to ameliorate social problems?

Does this research have scientific merit in the opinion of qualified social scientists?

[23] Weiss, Improving the Linkage. . . ., op. cit. p. 35.

knowledge through the filter of political judgment may often be a preferable route to action.[24]

2. THE ENLIGHTENMENT MODEL

Aware of these factors, over the last ten to fifteen years many commentators and experts on the utilization of behavioral and social research have concluded that while behavioral and social research findings may accumulate over time and influence what decisionmakers think and do, usually one particular study cannot be linked to one specific policymaking decision. Basically, they conclude that behavioral and social research "enlarges the 'frame of reference' for decisionmaking," [25] sets boundaries for the discussion, and provides an institutional/intellectual history of the issue, and helps to warn decisionmakers to avoid policies which ". . . will almost certainly not produce the intended results." [26]

This information was presented in the report to support the conclusion that Federal policies, especially funding policies for the behavioral and social sciences, must recognize that in some cases knowledge produced will not be applied immediately, but in future years. William Morrill, President of Mathematica Policy Research, who also has an extensive career in the Federal Government, spoke about this issue at a congressional breakfast sponsored by the Consortium of Social Science Associations in September 1985. "[T]ypically," he said, "social science research excercises more subtle impact on policies as data from many studies accrue over time into a body of knowledge." [27]

The enlightenment model of use was discussed implicitly and explicitly during hearings on behavioral and social science held by the Task Force on Science Policy of the House Committee on Science and Technology in September 1985. For instance, Albert Rees, Sloan Foundation, testified that often overlooked are the long-term impacts of the behavioral and social sciences, including "the ways we *think* about human development or corporate cultures and labor relations, or crime, depend on social science conceptions." [28] Francis Sutton, Ford Foundation, agreed, citing, "the crucial contributing role social science played in the gradual elimination of famine in India, or in preparing for resumed diplomatic relations with China.[29] Carol Weiss illustrated "the enlightenment function" with a few other examples:

> No one study has much effect, but, over time, concepts become accepted. People begin to accept, for example, that

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[24] Weiss, Improving the Linkage. . . ., op. cit. p. 35.

[25] See, for example, Weiss, especially Improving the Linkage, op. cit., passim and Comfort, Louise K. Book Review. Putting Knowledge to Use: Facilitation the Diffusion of Knowledge and the Implementation of Planned Change. Edward M. Glaser, Holrd H. Abelson, and Kathaleen Garrison. (San Francisco: Jossey Bass, 1983). In Knowledge, Creation, Diffusion, Utilization, v. 6 Mar. 1985: 293-302.

[26] Comments of F. Thomas Juster at COSSA breaskfast on The Uses of Social Science Research, Sept. 1985. COSSA Holds Seminar on Uses of Social Science Research. COSSA Washington Update, Sept. 1985: 2-3.

[27] COSSA Holds Seminar on Uses of Social Science Research. COSSA Washington Update, Sept. 20, 1985: 21-3.

[28] Special Report. House Task Force Holds Social Science Hearings. COSSA Washington Update, v. IV, Oct. 4, 1985: 7.

[29] Idem.

> the introduction of advanced technologies in developing countries often has negative social side effects. The notion comes into currency that prisons, however enlightened, are poor places for rehabilitating criminals. Over a span of time and much research, ideas like these filter into the consciousness of policy-making officials and attentive publics. They come to play a part in how policymakers define problems and the options they examine for coping with them.[30]

Nathan Caplan and his associates interviewed 204 Federal decisionmakers in 1973 and 1974 to determine if and how they used social science research in decisionmaking. Their conclusions were similar.[31]

Research information may be used by both sides to a conflict. But its major virtue, according to Weiss, is that it "reduces conflict by narrowing the zone of uncertainty." Specifically, she continued:

> It establishes which variables are implicated in outcomes, something about their relative importance, and the interrelationships among them. It keeps people from arguing about what actually is, and saves them time to deal with the issue of values—with what ought to be. Although it does not resolve the policy issue, it focuses debate more sharply on its problematical and value-related facets.[32]

Weiss and Bucuvalas's study of the use of social science information by decisionmakers in the mental health field at the Federal, State, and local levels brought some empirical verification to these notions. Research information was valued by these officials ". . . not only for the specific data it provides but more importantly for its ideas. It is the generalizations and concepts from the social sciences that they often find most useful in helping them construct their images of their mission." [33] Research information helped them to understand what the agency had been doing and why, suggested alternative courses of action, and provided a critique for existing policies.

There is some indication that social and behavioral science information can be judged to have made an effective contribution to the work of presidential commissions, when effectiveness is judged in terms of "enlightenment." One view is that the work of commissions of this nature has greater impact "indirectly in the longer term than directly in the short-term through the immediate implementation of recommendations." This view was endorsed by David Linowes who chaired the U.S. Privacy Protection Study Commission, and emphasized the value of the "educational and publicity functions his commission served and the role that social scientists

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[30] Weiss, Improving the Linkage, op. cit., p. 77.

[31] Caplan, Nathan, Andrea Morrison, and Russell J. Stambaugh. The Use of Social Science Knowledge in Policy Decisions at the National Level: A Report to Respondents. Ann Arbor, The University of Michigan, 1975, p. 63.

[32] Ibid., Weiss, p. 76.

[33] Weiss, Carol H. with Michael J. Bucuvalas. Social Science Research and Decisionmaking. New York, Columbia University Press, 1980, p. 269.

played in exposing the principal issues and analyzing their implications." [34]

E. Symbolic Utility

A variation of the enlightenment mode of utilization is the symbolic model, in which politicians or advocates on any side of an issue invoke the findings of behavioral and social science to give status and legitimacy to their viewpoint. In a comparative international analysis of governmental commissions, Peta E. Sheriff concluded that analysis of the utility of social science "has ignored the extent to which commissions perform a legitimating function within the political system." [35] Among the findings in Scott and Shore's historical analysis of the use of sociological studies in Government, especially in planning, was a similar conclusion. They observed that one of the most important functions served by social sciences in policymaking is the ceremonial, or symbolic, function of making governmental decisions appear rational and legitimate.[36]

F. Factors Which Impede the Utilization of Behavioral and Social Science Research Findings in Decisionmaking

The immediate and effective use of behavioral and social science in policymaking may be constrained by the many complex facets of decisionmaking noted above. In addition, credible behavioral and social scientists, in a variety of recent studies, have concluded that there are several other factors related to the conduct and content of behavioral and social research and its presentation which may further impede effective utilization.[37] These factors, which will be discussed next are: counterintuitive findings, irrelevance, political naivete, need to respond to the academic reward system, inadequate knowledge and inappropriate quantification, and fraud and deception.

1. POLITICAL NAIVETE

Lack of effective use may be attributed to the political naivete of some behavioral and social scientists, who, "failing to comprehend the fiscal and political realities confronting policy-makers . . ., sometimes produce recommendations that are implausible, impractical and unrealistic" [38] or which threaten to change the operations or bureaucracy in which the decision-maker functions.

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[34] Blumer, Martin. Commissions on Instruments for Policy Research. In Social Science and Policymaking: The Use of Research by Governmental Commissions. Edited by Martin Blumer. American Behavioral Scientist, v. 26, May/June 1983; 559-567. This anthology included case studies on the following commissions: the Royal Commission on Gambling, The U.S. Privacy Protection Commission, the Royal Commission on the National Health Service, the Presidential Commission on the Accident at Three Mile Island, Governmental Commissions in Sweden, and An Anglo-American Comparison.

[35] Scott and Shore, op. cit., p. 129.

[36] Idem.

[37] See, for example, Weiss, Improving the Linkage . . . op. cit., p. 78; Berger, Suzanne. Introduction. The Utilization of the Social Science in Policy-Making in the United States. Case Studies. Paris, Organization for Economic Co-Operation and Development, Paris, especially p. 13-19; and Cronbach, Lee J. Prudent Aspirations for Social Inquiry. In Kruskal, William H., ed. The Social Sciences: Their Nature and Uses. Papers presented at the 50th Anniversary of the Social Science Research Building, the University of Chicago, Dec. 16-18, 1979. Chicago, The University of Chicago Press, 1982. p. 61-82.

[38] Scott and Shore, p. 30.

Scott and Shore evaluated the history of use of sociological research in numerous governmental programs and planning efforts over the last almost 100 years, and concluded:

> First, a great deal of sociological research done for application carries *no discernable policy implications of any kind;* second, in instances where it does, sociology has served as the basis for formulating policy recommendations, less often the basis for enacted policy; and third, most of the recommendations for policy in which sociology has played a role were rejected by policy-making bodies of Government as impractical or politically unfeasible.[39]

They cited criticisms made by several social scientists who have long experience working in Government, and gave as examples recommendations which called for revolutionary changes in existing institutional arrangements or recommendations which "provided a diagnosis of the problem but one that has no significant implications for policy." [40] Often times an appropriate policy recommendation will embody a prescription for a change in the policies or in the bureaucracy in which the decisionmaker functions. But behavioral and social scientists may lack adequate knowledge of bureaucratic functioning to make pertinent recommendations. But perhaps more important, decisionmakers at all levels usually resist change because it tends to erode their authority. Decisionmakers, according to Weiss, have different reward systems and methods of operation than social scientists:

> They respond to a very different set of institutional arrangements and environments from those that affect researchers. The rewards, interactions, and career patterns in the bureaucracy foster activity and accomplishment, accommodation with other actions, and caution about stepping too far beyond the departmental line. Policymakers have to satisfy their superiors (in the Office of the Secretary, the Office of the Management and Budget, or the White House) and consult with a range of interested parties in other executive agencies, the legislature, the work is geared to a fiscal year, in which annual budgeting and the calendar of expiring legislation create pressures to get decisions made." [41]

Sometimes, policymakers or research funders cannot specify the kinds of information they need to solve problems in terms compatible with the research processes of the behavioral and social sciences:

> Not only is it hard for decisionmakers to identify the topics on which research should be done, but it is even harder for them to specify the particular kinds of data or statistical relationships that would clarify an issue. Sometimes they overspecify the research question, assuming more than is known and foreclosing a range of possibili-

[39] Scott and Shore, op. cit. p. 28.
[40] Scott and Shore, op. cit. p. 30.
[41] Weiss, Improving the Linkage . . ., op. cit. p. 37.

> ties; they move to the immediate and practical [too soon]. On the other hand, they sometimes overgeneralize the question, offering vague objectives without direction as to the limits on acceptable alternatives or available instrumentalities.[42]

There is also the view that behavioral and social information do not always influence national issues because no amount of additional information will help resolve the issue.[43] A related factor is that organizations which asked for information or sponsored research are not always organized in a manner to use it. Szanton came to this conclusion in his study of why social science advice was of little use to the cities.[44]

There is also the inescapable view that politicians may reject behavioral and social science information if it recommends policy or advocates a position, since science is perceived as being at its best when it is objective and neutral. (As an example of this principle, Congress' major policy analysis support agencies, the Congressional Research Service, the Office of Technology Assessment, and the Congressional Budget Office, may not recommend policies to their clients, but may discuss options and the pros and cons of policy alternatives.)

2. COUNTERINTUITIVE FINDINGS

Another reason that behavioral and social science findings may not be applied easily in policymaking is because they are often counterintuitive and, therefore, although correct, are rejected as implausible guides to action. For instance, only about half the homeowners in Southern California have earthquake insurance, and, as a result, they could suffer millions of dollars of nonreimbursable damage. Traditional economic theory would expect people to protect themselves against "such a ruinous possibility." But a relatively new field of study, called behavioral economics, has shown that "people don't act the way economic theory predicts they will" because, "in the case of insurance . . . people want to get something for their premium money." They insure against losses which they believe will occur, but which do not involve big losses. However, they tend not to protect themselves against losses that are less likely to happen but do involve a big loss. Attempts are now being made to inject these expectations of "irrational" and "illogical" behavior into economic models.[45]

3. IRRELEVANCE

Several factors contribute to the issue of irrelevance, including overspecialization and time-frame.

According to Scott and Shore, some of the sociological work done for governmental policymakers is irrelevant. They suggested sever-

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[42] Weiss, Ibid., p. 43.
[43] Szanton, Peter. Not Well Advised. New York, Russell Sage and The Ford Foundation, 1981. 173 p.
[44] Idem.
[45] Bales, John. Behavioral Studies Alter Economic Theory. APA Monitor, Oct. 1984. p. 3, See also: Kunreuther, H. et. al. Disaster Insurance Protection: Public Policy Lessons. New York, John Wiley and Sons, 1978.

al reasons why. One "is that it tends to be too piecemeal, specialized and partial in scope to ever be applicable to policy-making." [46] Citing the criticisms made by other social scientists (David Easton, Harold Orlans, Yehezkel Dror and David Truman), they explained that such work is often narrow and focused on one fragment of the problem at hand. "As a result, sociological research on policy questions has often lacked the type of general holistic, integrated perspective that is required for developing and implementing social policies and programs." [47]

The utility of social research for policymaking may be further circumscribed by the lack of coincidence between the time span and the content of social research and the uncertainties and prospective nature of policy-making. Thus according to Mayer:

> Policy-making involves decisions governing events which extend into future time frames. Research, on the other hand, is based on known events of the past and present. Such research is often a poor basis on which to make policy decisions because it does not account for new or unforeseen events, nor does it take into consideration the purposeful nature of human bahavior which can act on present events to create a different future.[48]

4. DIFFERENCE IN REWARD SYSTEM MAY GENERATE RESEARCH WHICH IS TOO LATE, OVERLY QUANTIFIED, AND INAPPROPRIATE AS A GUIDE TO POLICY

Behavioral and social scientists' work and performance are measured according to the reward systems of the scientific disciplines, rather than of policy. As a result their products are meant usually to serve and be judged by their scientific peers, not by policymakers.

Researchers in a university setting need to respond to the requirements of the academic reward system which is ". . . based on publishing research results in books and journals and hewing close to the mainline interests of the discipline rather than getting enmeshed in interdisciplinary research, which is often derogated as watered down scholarship. . . ." [49] even though the Government often needs interdisciplinary work. Similarly the goal of achieving tenure requires that researchers fulfill such other traditional functions as attending meetings and counseling students. Such requirements often mean that research takes a long time to do and is written in technical jargon suitable for publication in a refereed scientific journal. The nature of social research and the time delays caused by the experimental or tedious data-gathering processes used to conduct it usually do not coincide with policymakers' needs. For instance:

> If policymakers want to know the effects of housing allowances on the supply of housing in a community, for ex-

[46] Scott and Shore, op. cit. p. 29.
[47] Idem.
[48] Mayer, Robert R. Social Science and institutional Change. New Brunswick, Transaction Books, 1981. p. 93.
[49] Weiss, v. 5, p. 37.

> ample, there is little previous information on tap and no clear way to find out. The recourse is to carry out an experiment and watch—but an experiment is no mean feat. Small samples will not do; a community has to be as saturated with housing vouchers as it would be in real life. All the poor people eligible must be given vouchers, in order to see whether the cost of renting or buying a house will go up and whether old buildings are improved and new buildings are constructed to fill demand. A long time and a good deal of study would elapse before answers are available; even then, the few communities studied would not be representative of the universe [the nation] in which the program would ultimately be implemented.[50]

Another complex set of research-production factors that tends to limit effective utilization includes: the relative youth of the social sciences as sciences; the difficulty of obtaining systematic observations, much less doing experiments with control and experimental groups; the uncertain quality of theory and knowledge in these sciences; the constantly evolving and multiple views about how to ask questions and answer them; the lack of agreement among scientists; and the presence of competing "schools" or "approaches" to explaining human behavior. The theory and knowledge base of all sciences is constantly being updated, modified, and improved, but the fields of the behavioral and social sciences seem more prone to challenge as their prevailing approaches shift back and forth between structural-functional-institutional emphases to quantifiable-behavioral emphases.

The Federal Government may be responsible, in part, for some of this problem, since it has, over time, tended—in the financing of basic research—to support studies which lend themselves to quantification, since these kinds of social research studies are less subject to attack as being non-scientific. (See chapter II of this study.) However, the dangers of inadequate knowledge, theory, and a misplaced emphasis on quantification may be especially troublesome for the behavioral and social sciences whose topics of study interface so closely with public policymaking. Criticims of this nature have been directed against all fields of the behavioral and social sciences. For instance, Lee J. Cronbach, a Professor at Stanford University recently wrote:

> Recent social science has sacrified to false idols. The 1960s and early 1970s placed faith in sheer technique. Psychologists—many of them—came to think that testing of null hypotheses is sufficient to make a science and that randomized field tests are sufficient to determine a policy. Sociologists, newly enamored of path analysis, began earnestly to give causal meaning to correlations. Economists, despite their greater experience, began to see that same kind of analysis as a servomechanism with which to move the world.[51]

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[50] Ibid., p. 45–46.
[51] Cronbach, Lee J. Prudent Aspirations for Social Inquiry. In Kruskal, The Social Sciences: Their Nature and Use, op. cit. p. 62.

Several recent essays have addressed these issues in the field of economics. For instance, Theodore W. Schultz criticized university-based economists for too easily accommodating patrons of research funds and, as a result for neglecting "scholarly criticism of economic doctrines and of society's institutions."[52] Juanita M. Kreps, former Duke University economist, who was Secretary of Commerce in the Carter Administration, in a farewell interview in 1979, stated that social sciences may not be used effectively because they do not provide answers to such problems as inflation considered important by Government.[53] In her summary of the cases in the OCED study on the *Utilization of Social Science in Policy-Making in the United States*, Berger summarized how an attempt to use economics in policymaking was not useful because it ignored policymakers' needs, while, at the time, catered to the formal mathematical models valued in economic science:

No case better illustrates the obstacles that the structure of disciplines can place in the path of cooperation between social scientists and policy-makers than the Roberts study of the role of economists [in the OECD volume] in the debate over how to treat water pollution. Roberts concludes that the contribution of economists was completely irrelevant to the needs of the policy-makers:

> The academics were answering questions which the real world was not asking. The Congress wanted a policy which would reliably move a lot of recalcitrant towns and industries to clean up their waste discharges. It (or at least its committees) were concerned about unforseen risks, provoking technical change and avoiding investments that would only look like mistakes in the long run. The economists were focusing on short-run, inefficient resource allocation in a world of given technology, perfect information, and rational, cost-minimizing waste sources. The Congress wanted to do something about dirty water, the economists wished to correct the failure of a market to produce results consistent with Pareto Optimality. The pressures of success and prestige within a university-based guild led many highly talented social scientists to see in reality only a reflection of the conceptual system they brought to the encounter.

To explain this outcome, Roberts points to two factors, the inadequacy of the theory economists brought to bear on the problem, and the dearth of economists interested in it. Both of these factors are essentially products of a particular kind of disciplinary development that assigns high prestige to the elaboration of formal mathematical models and to the conceptualization of the economy in highly abstract, parsimonious terms. This development, combined with the dominance of a particular set of assumptions about how the economy operates—the competitive equilibrium model—and about the goals of the economy—Pareto Optimality—provided economists with special lenses through which they viewed pollution. With these lenses, the problem of cleaning up water pollution

[52] Schultz, Theodore W. Distortions of Economic Research. In Kruskal, op. cit. p. 132-133.
[53] Kreps, Juanita M. Introspective Farewell. Washington Post, Nov. 3, 1979: A1, A4.

could only be seen as a problem of "market failure," or finding the correct prices for pollution, so that the waste producers, assumed to be rational, cost-minimizing firms, would readjust their sights. As Roberts shows in his paper, this view of the world was not only altogether useless to the policy-makers but can hardly be considered to have come to terms with the problem at all.[54]

In a study written about five years later, in February 1985, Robert Kuttner surveyed the status of economics and found a "discipline riven with epistemological doubt on the one hand and rigid formalism on the other." He looked at philosophical, traditional, and methodologically sophisticated approaches to economics, and concluded that much of economics research is not serving public policy (nor generating clearcut answers to scientific questions) because some economists are so attached to abstract mathematical models or inaccurate postulates of the way society operates, that they do not understand the societal institutions which propel the economy. For instance, the traditional economic principles of a self-regulating economy or perfect competition do not occur in society, but much economic research uses them as bedrock theoretical axioms:

> In economics, deduction drives out empiricism. Those who have real empirical curiosity and insight about the workings of banks, corporations, production technologies, trade unions, economic history, or individual behavior are dismissed as casual empiricists, literary historians, or sociologists, and marginalized within the profession. In their place departments of economics are graduating a generation of *idiots savants*, brillant at esoteric mathematics yet innocent of actual economic life.[55]

Needless to say, these criticisms are not universally applicable and the economics profession is not without convincing rebuttals.[56] An indisputable case for the general impact of economics on policy, can be made, of course, by citing the important theoretical and empirical work, for instance, of John Maynard Keynes on monetary and fiscal policy, Walter Heller on revenue sharing, and Joseph A. Pechman on tax policy. The policy relevance of Paul Samuelson's research and explanations of the functioning of capitalist economies is often cited. During the Task Force on Science Policy's hearings on behavioral and social science during the Summer of 1985, Herbert Simon, a Nobel prizewinner testified that "Our theories about how economies operate are far more sophisticated and valid than they were in the 1930s, and the domain of agreement among economists—even those who we think are spread far apart on the spectrum—is very large."

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[54] Berger, op. cit. p. 14-15.

[55] Kuttner, Robert. The Poverty of Economics. Atlantic Monthly, Feb. 1985: 74-84, see especially p. 77.

[56] See for instance: Heller, Walter W. What's Right With Economics? The American Economic Review, Mar. 1975; 1-26; Coates, A. W. The American Economic Association and the Economics Profession, Dec./ 1985, v. 23: 1697-1727, and Essays Commemorating the Centennial of the Association. The American Economic Review, v. 75, Dec. 1985: 1-70.

5. DECEPTION AND FRAUD

Fraud and deliberate deception are practices which may influence decisionmakers' perceptions and, ultimately, utilization patterns of the behavioral and social sciences. According to one researcher, ". . . Deception is common in social science research." This conclusion, according to Donald P. Warwick a sociologist who has been affiliated with the Institute of Society, Ethics, and the Life Sciences in Hastings-on-Hudson, may be ". . . in some areas, virtually the norm." He continued:

> In order to facilitate the collection of data, or to advance man's knowledge, or to help the oppressed, researchers condone deception in the laboratory, on the streets, and in our social institutions. They deliberately misrepresent the intent of their experiments, assume false appearances, and use other subterfuges as dubious means to questionable ends.[57]

Some researchers believe that deliberate deception may be warranted as an acceptable data gathering research technique if no other means are feasible.[58] But Warwick and others seem to believe that such practices are reprehensible and border on lying. Among the unacceptable practices cited by Warwick and others are:

> deliberate public deception, in which scientists lie to the public to see if they will behave certain ways (for instance, lying to teachers that some students had lower IQs than they really did, to determine if teachers would deliberately treat these students as if they were of lower IQ and would classify their performance as lower than those with falsely labeled higher IQs);
>
> in the laboratory, using "stooges who pose as fellow subjects in an experiment";
>
> covert observation, in which scientists gather data while participating in the daily lives of their subjects without informing them, such as pretending to be homosexual in a gay bar and then publishing information about the people they became acquainted with.

There also have been reported instances of fraud or of "deliberate falsification of data" in the social sciences.[59] Pettigrew illustrated this ethical dilemma as follows:

> Consider the sociologist who conducted an intense national media campaign against interracial schools ostensibly as a scientist reporting on his study of so-called "white flight" (see Pettigrew and Green, 1976). He talked of the motivations of white parents to avoid "busing, although his research involved no interviews with white parents

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[57] Warwick, Donald P. Social Scientists Ought to Stop Lying. Psychology Today, Feb. 1975: 38, 40, 105, 106.

[58] For comprehensive discussions, see: Seeman, J. Deception in Psychological Research. American Psychologist, v. 24, 1969: 1025–1029 and Bion, G.M. and M.W. Kipsey. The Challenge of Change. American Psychologist, v. 39, 1984: 739–754.

[59] Beyer, Janice M. and Harrison M. Trice. The Utilization Process: A Conceptualization, Review, and Analysis. Working Papers, Series No. 5251. State University of New York. Buffalo, N.Y., Mar. 1, 1982. p. 35.

> and no measure of school transportation. Worse, no copies of his report—much less his data—were available for four months following the initial public announcement of the study upon which the campaign was based.[60]

There is no rigorously gathered information to demonstrate that the unethical use of these practices is widespread. Abuse appears to occur in all scientific disciplines involving human subjects, and may stem, in part, from competition to publish and establish a reputation, in order to obtain increasingly scarce Federal research dollars.[61] In order to minimize the negative impacts of these practices, professional societies, such as "the American Sociological Association and others have proposed ethical guidelines for policy-related social research that requires that the relevant data be immediately available for reanalysis by other social scientists."[62] The National Academy of Sciences also recommends sharing of research data to improve the research process and to protect against faulty or fraudulent data.[63] It should be noted that the use of deception as a research technique may have decreased over the last few years because now university researchers who need to use deception to obtain data are required to obtain approval from institutional human subjects review committees at their institutions before commencing their research.[64]

G. Political Obstacles to Effective Utilization

Social and political values may have more effect on the utilization of behavioral and social research than any other factor. Values probably affect all sciences equally since they influence the researcher's selection of priorities and help to determine the theory and methodology used.[65] The values that will be discussed in this section affect the utilization of research findings. Most research and published literature on knowledge utilization had demonstrated that if a finding in behavioral or social research does not coincide with the prevailing consensus about the solution to a problem, the finding probably will have little impact. And, at times, decision-makers may even use incorrect or inadequate information if it supports their viewpoint. Kenneth Prewitt, President of the Social Science Research Council, expressed this view in 1984:

> Effectiveness of the social sciences . . . often occurs at the point of overlap between the research agenda and the political-economic agenda of society. . . . In ways more

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[60] Pettigrew, Thomas F. Can Social Scientists Be Effective Actors in the Policy Arena? In Shotland, R. Lane and Melvin M. Mark, eds. Social Science and Social Policy. Beverly Hills, Saga Publications, 1985. p. 131.

[61] Smith, Jeffrey R. Scientific Fraud Probed at AAAS Meeting. Science, v. 228, June 14, 1985: 1290–1292.

[62] Idem., citing Ethics Committee of the American Sociological Association, 1981. Warwick and Pettigrew, 1983.

[63] Sharing Research Data. Washington, National Academy of Sciences, 1985.

[64] Federal Code 45 CFR 46, Ethical Principles in the Conduct of Research With Human Participants, 1982.

[65] Weiss expressed this view with respect to the social sciences as follows: ". . . All choices of emphasis in the social sciences are governed by some set of values. Explicitly or implicity, value considerations guide the selection of topic to be studied, variables to be analyzed, and even the areas of human behavior to be modeled in . . . theory construction. (Weiss, Carol H., ed. Using Social Research in Public Policymaking. Lexington, Mass. Lexington Books, 1977. p. 3. See also Ravetz, op. cit. and chapter IV above.)

> direct than is true for the natural sciences, . . . our effectiveness is mediated by the political and economic structures in which persons outside of the social sciences are located, structures which are also a subject matter for social science.[66]

Irving Louis Horowitz has studied utilization, participated in many domestic and international social research projects, and is editor of *Society*, a journal at the interface of science and public policy. He commented: "Social science recommendations tend to be accepted or rejected on a basis other than that of the inherent quality of the research and conclusions."[67] "Social science operates best on public policy when there is a preexisting broad-based consensus; it operates worst under conditions of public dissensus."[68] Political factors affect use, William Morrill noted, at a congressional seminar when he said that ". . . to the extent that research produces a result which is counter-intuitive or runs counter to traditional values, it is less likely to have an impact on policy."[69] The OECD reached similar conclusions in its series of case studies assessing the utilizations of behavioral and social sciences in policymaking in the United States.[70]

There are the views that the social research conclusions used to design and evaluate the so-called "Great Society" or "War on Poverty" programs, which began in the 1960s, began to fall into disfavor later not because of questions about validity, but because of growing competing claims for use of resources for the Vietnam war, the economic recession during the late 1970s, and the facts that the poor and blacks were gaining more access to the power structure and, therefore, threatened the existing status quo. According to Horowitz, these factors combined effectively to undermine the consensus about the need to eradicate poverty.[70a]

It should be noted that some believe that behavioral and social research findings that diverge from the status quo can well be effectively used because they tend to set in motion a serious questioning by critics and interest groups of the premises and outcomes of current policy. Impact may not be discernable immediately. This hypothesis probably needs to be investigated since the mechanisms operating here are uncertain and unpredictable. For instance the OECD study on utilization reported:

> . . . [A] sense of political urgency and national need are not conditions that social scientists as such are likely to be

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[66] Prewitt, Canada, op. cit. p. 3. See also, Weiss, Improving the Linkage . . . p. 30 and passim, and Using Social Research . . ., op. cit., passim. Weiss concluded "Social sciences knowledge is not apt to be so compelling [as physical science knowledge], nor does it readily lend itself to conversion into technologies, either material or social. Development and application are probably less likely to occur unless a social problem has been consensusally defined and politicized and potential solutions debated." (p. 30.)

[67] Horowitz, Irving Louis and James Everett Katz. Social Science and Public Policy in the United States. New York, Praeger Publishers, 1975. p. 50, 93-94, 165.

[68] Ibid., p. 93-94, 165.

[69] COSSA Holds Seminar on uses of Social Science Research. COSSA Washington Update, Sept. 28, 1985. p. 21-23.

[70] Berger, op. cit. p. 19-20.

[70a] Horowitz and Katz, op. cit. p. 135-139. For an opposing socio-logical view, that the 'War on Poverty" doesn't "help people get back on their feet," but ". . . traps many needy people in permanent dependency," see: Segalman, Ralph and Alfred Himelson. How Welfare Reform Finally Happened. The Futurist, Oct. 1984. p. 14-19.

able to generate. To the extent that ideas and writing can stir up national concerns they will far more likely be those of writers with a mass audience in view like Michael Harrington (whose *The Other America* sparked the public "discovery of poverty") or Rachel Carson (whose books played an important early part in the environmental movement) or Ralph Nader than of social scientists. When social scientists do contribute to creating an atmosphere of urgency about a social problem, the factors that are involved are as often personal experience, conviction, and partisanship as professional competence.[71]

1. THE MOYNIHAN REPORT

There are many case studies of utilization in both the United States and abroad, which illustrate the issues discussed immediately above.[72] Some cases serve as examples of "rejection of social science findings that were generally correct." [73] One example is the rejection of the Moynihan study which was conducted by Daniel P. Moynihan, to answer the question of why blacks often failed selective service tests. He concluded that this, as well as socially deviant behavior such as crime and delinquency, was due in large measure to instability in black families—the number of female-headed households. Moynihan "then proposed 'a national effort' to enhance the stability and resources of the black family as a route to remedy." However, he did not offer any specific programs or solutions.[74] President Lyndon B. Johnson publicly endorsed this view; but the report, after much acrimonious debate, reportedly was "repudiated" by civil servants and civil rights and black advocates and by others who held the view that "white racism" and societal factors were to blame for black plight, and that blacks were not to be blamed for their plight. According to Wilson, in 1978, "to this day, no significant public official will raise the issue, although developments since then have made the initial argument even stronger." [75] Others note however, that economic conditions related to discrimination helped to foster family instability.

2. COMMUNITY ACTION PROGRAMS TO STEM JUVENILE DELINQUENCY

In a report published by the National Research Council of the National Academy of Sciences, Wilson also offered an example of what could be called the premature use of an incomplete body of social science knowledge, which he attributed to coinciding political circumstances, even though the ". . . social science theory [on which the research was based] . . . at the time had almost no evidence to support it whatsoever and . . . when put to a test, was

[71] Berger, op. cit. p. 20.
[72] Organization for Economic Cooperation and Development. The Utilization of the Social Sciences in Policy Making in the United States: Case Studies. Paris, OECD, 1980. 372 p. The case studies include the issues of negative income tax, labor markets, Clean Water Act of 1972 and regional planning.
[73] Wilson, James Q. Social Science and Public Policy: A Personal Note. In Knowledge and Policy: The Uncertain Connection, 1978, op. cit. p. 87.
[74] Ibid., p. 86.
[75] Ibid., p. 86.

found wanting." [76] It deals with failed community action programs to end juvenile delinquency:

> In the Kennedy administration, the attorney general led a new Federal effort to combat juvenile crime. There was at that time a new theory about the causes of delinquency developed [in] a number of important, publicly supported projects, notably by Richard Cloward and Lloyd Ohlin from the earlier work of Emile Durkheim and Robert Merton. It argued, briefly, that deliquency occurred when young people, denied legitimate means to attain legitimate ends, adopted illegitimate means to those ends. The means available were determined by the structure of opportunity available at the community level, a structure that could be altered, and thus improved, by community organization. This idea became the organizing principle for Mobilization for Youth in lower Manhattan, which in turn became a partial model for the "community action agency" approach to dealing with poverty under the Office of Economic Opportunity.
>
> At the time the theory carried the day, neither Cloward nor Ohlin claimed it was more than a theory. But it had the virtue that, true or not, it served the political and organizational needs of a variety of key actors: it seemed to be addressed to delinquency prevention; it appeared to get at the "root causes" of crime; it did not involve reliance on the allegedly stigmatizing and punitive effect of the criminal justice system; it could draw on the experience and enthusiasm of social workers and community organizers; it placed the blame for crime on "the system" and not on the juvenile; it provided a model for direct Federal intervention in cities without relying on State Governments and existing bureacracies; it appealed to various foundations willing to put their own money into the effort; in addition to reducing crime, it would help mobilize communities to more effectively cope with local bureaucracies; and it might be a way of coordinating and monitoring the delivery of a variety of public services to the poor. The pilot project, Mobilization for Youth, did a number of things about which there still swirls some controversy. About one thing there is no controversy at all: it did not reduce juvenile delinquency. Indeed because of the multiple motives of those who organize the program testing the potential of community organization to reduce deliquency was never a control goal of the effort.[77]

3. USE OF BEHAVIORAL AND SOCIAL SCIENCE IN THE COURTS APPEARS TO BE INFLUENCED BY THE PREVAILING POLITICAL CLIMATE

There are also other cases where behavioral and social information, whether correct or not, was used if political circumstances dictated its use. Collins, for instance, reported that the first use of

[76] Ibid., p. 87.
[77] Wilson, p. 87 and 88.

social science by the courts was a 1905 Supreme Court decision, Lochner v. New York (198 U.S. 45 [1905]), which found that the employees in bakeries should not be limited to work less than a ten-hour work day because social science information showed that working in bakeries was not a hazardous profession in comparison to other professions. She concluded that the court misused this information because it reflected only "ideal" conditions, which usually did not prevail. ". . . Biased research presented in the employer's brief circumvented the traditional standard and succeeded in influencing a majority of the Court." [78]

Social scientists generally agree that social science information, which really did not prove the point, was used in the 1954 Supreme Court Brown vs. Board of Education decision because " 'separate but equal' was an ideological posture that, for political reasons, was no longer accepted." [79] According to several scholars, the research that was used (conducted by Kenneth Clark) and cited by the NAACP and that showed a discriminatory effect of segregation (children's preferences for white or black dolls), was not germane. Horowitz and Katz concluded:

> . . . The Court made its decision on the basis of its sense of the effect of segregation and the requirements of the Fourteenth Amendment. . . . But social science was not the foundation of the decision; it was used to lend weight to what the justices clearly were persuaded was true: that segregated education is unequal education. . . . The Supreme Court is, then, a policymaking body, and like any such body it recognizes that there is no truth or untruth, no right or wrong, that there are only degrees of each.[80]

Specifically according to Collins ". . . the social research could have served as a political placebo. Passed off as an objective basis for such a revolutionary decision, the Court could have merely injected the research to soothe the public mind and remove part of the blame from the Court." [81]

Most observers agree that the use of social science information in the Brown vs. Board of Education case did set significant precedents which legitimized subsequent widespread attempts to use social science in court decisions.[82] There are differences of opinion about whether such information has been used effectively in subsequent court decisions. A National Academy of Sciences report observed that there are instances in which unverified scientific research results have been used in policymaking—for instance in a Supreme Court decision to reinstate the death penalty—even though subsequent research invalidated the work.[83] In 1978, Col-

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[78] Collins, Sharon M. The Use of Social Research in the Courts. In Knowledge and Policy: The Uncertain Connection, op. cit. p. 149.

[79] Horowitz and Katz, op. cit. p. 50.

[80] Ibid., p. 132. Collins, op. cit., concurs, see p. 170.

[81] Ibid., p. 170.

[82] Saks, Michael J. and Charles H. Baron, ed. The Use-Nonuse-Misuse of Applied Social Research in the Courts, Cambridge Mass. Abt Books, 1980, 189 p.

[83] The Academy reported: "In 1975, an economist published a paper that claimed each execution in the United States between 1935 and 1969 had prevented seven to eight murders. Prior to publication, the research results reached the Supreme Court, which subsequently overturned a previous ruling of unconstitutionality and reinstituted capital punishment. Because the data

lins surveyed the use of four types of social research information in the courts (expert testimony, results of existing studies, public opinion polls, and especially conducted research). The cases she studied included criminal law, surveillance, pornography/obscenity, and separation of church and state. She concluded that the social sciences are beginning to have an impact on the legal system but there are still significant obstacles:

> Attorneys and judges have begun to view legal issues neither in isolation nor in a vacuum, but in the more comprehensive framework of conditions revealed by the social sciences. In perspective, however, this development represents only the first step. Upon analysis, three forces appear to be the major hindrances to social science-legal cooperation. Foremost is the intellectual strain between lawyers and social scientists. More subtle are the political context within which social science and the law must interact and the time lag between the results of research by social scientists and their effects on the attitudes of society.[84]

The modes of perception and values of lawyers affect the way they use social science information independent of the substance of the information. Four factors enhance use, she said: "quantification, relevance, a perception of the absence of value judgments, and "concerns for the individual."

> Of all social science research, economic evidence regarding labor, antitrust, trade regulations, trademarks, licensing, taxation, and corporations has been used most extensively by the courts. Partial explanation for its frequent use is that economics, the most quantitative of the social sciences, ostensibly has fewer of the flaws that lawyers perceive as inherent in social sciences.[85]

Surveys dealing with Government regulations are well used but "more recently developed surveys dealing with the determination of community bias and the effects of segregation do not yet stand on firm legal ground. In contrast, statistical analysis, relying to a large extent on probability theory, has failed to earn the respect of the majority of those in the legal profession. Statistics have been particularly misused in criminal cases dealing with the establishment of guilt; although they have been a valuable tool in dealing with jury bias, jury size, and bail and pretrial detention."[86] With respect to the psychological and sociological evidence, ". . . lawyers remain skeptical of its value judgments, imprecisions, and distortions."[87]

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used in the analysis were not immediately available to other researchers, the economist's results could not be checked. Subsequent analyses by several other researchers pointed out major shortcomings in the original paper and contradicted the initial findings." Sharing Research Data: A Scientific Responsibility. National Research Council. News Report, v. 35, June 1985. p. 15. This article described a report: Sharing Research Data. Committee on National Statistics, 1985. Washington, National Academy Press. 240 p. The report concluded that data sharing should become a regular practice.

[84] Collins, op. cit. p. 178.
[85] Ibid., p. 149.
[86] Ibid., p. 147.
[87] Ibid., p. 148.

4. STUDIES BY JAMES S. COLEMAN

Social science findings which do not coincide with the prevailing values and views of politicians in power may fall by the wayside and not be used, at least in the short term. There are several examples. James Coleman, a sociologist, in a manuscript for a forthcoming book, reported that the findings of three of his research studies on education, conducted in the 1960s and 1970s, were not accepted by policy-makers because they contradicated prevailing social views or conceptualizations of problem solution. These were studies, some of which were funded by the Federal Government, which showed (1) most student achievement was determined more by parent's commitment to education than to the dollar amount of resources allocated to individual schools; (2) school desegration policy causes "white flight" to the suburbs; and (3) students who attend private schools, especially Catholic schools, are better achievers than those who attend public schools. The major detractors to his studies were, in the case of (1) and (2) supporter of desegregation policies, especially the NAACP, and in the case of (3) public school teachers and the National Education Association, which did not want to see public school support eroded.[88] Criticisms have been made of his methodologies and conclusions,[89] but the general view is that his findings did not coincide with policy solutions deemed optimal at the time by the legislative and executive branches. However, it appears as if the studies may have influenced the judicial branch.

5. THE CASE OF INTELLIGENCE TESTING

The following case study of the development and use of intelligence tests illustrates how a scientific technique, originally of limited application, came to be used, or misused, because of prevailing social and political values even though it was not wholly endorsed by the psychology community.

For many years the application of the intelligence test (I.Q.) to support various prejudices of class, race, or human potential have obscured the basic questions: What is intelligence? Can anyone measure it? Does intelligence change over time? Is the best predictor of success a single measure of intelligence, or should valid predictors of success measure multiple skills and attributes? These questions persist today.

a. Development of the technology for intelligence testing

In 1904, Alfred Binet, Director of the psychology laboratory at the Sorbonne, was commissoned "to develop techniques for identifying those children whose lack of success in formal classrooms suggested the need for some form of special education."[90] Binet has

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[88] Chapter 2. Coleman, James S. Educational Policy for Youth and High Schools. In Barber, C. Bernard. Effective Social Science: Relations Between Empirical Social Research and Social Policy, manuscript, forthcoming.

[89] Coleman, Chapter 2, op. cit., Pettigrew in Shotland and Mark, op. cit. p. 126, citing Coleman, Hoffer, and Kilgore, 1981. They focus on his purported lack of recognition that private schools tend to support higher status students who are generally higher achievers, and his methods of interacting with the media. See also Mosteller, Frederick and Damiel P. Moynihan, eds. On Equality of Educational Opportunity, New York, Random House, 1972. 570 p.

[90] This information is part of the historical survey of intelligence testing found in Gould, Stephen J. The Mismeasure of Man. New York, W.W. Norton and Co., Inc., 1981. p. 149.

previously experimented with craniometry and, at one time, was convinced of the correlation between head size and intelligence. However, by 1900, he realized that there was no difference between the head sizes of intelligent and less intelligent students.[91]

Binet devised a test from a set of tasks, such as counting coins and determining from pictures which face was "prettier." He assigned an "age level," called "mental age" by others later, to each task. Children were tested individually. Binet sought to develop a test which would separate intelligence level from the effects of schooling. The age assigned to the last completed task became the child's mental age, which was subtracted from chronological age. In 1911, a German psychologist revised the scale when he divided mental age by chronological age, the yield an appropriate relative measure. Thereafter the measure was called the intelligence quotient or I.Q.

In *The Mismeasure of Man,* Stephen J. Gould noted that Binet cautioned that scores should not be used to rank or label children. Intelligence was too complicated to be captured by one number. But, when Binet's scale was brought to the United States, it began an evolution which has been described as a "major misuse of science in our century."[92]

b. Social environment in America circa 1910–30

In order to understand the application of the Binet Scale, it is necessary to review the social movements, problems, and concerns emerging in America society between 1910 and 1930. Public school education was undergoing a radical change in philosophy and number of students. High school enrollment quadrupled from 1910 to 1930.[93] The use of one standard curriculum was challenged. With the introduction of child labor laws and the movement to expand the scope of public education, a problem emerged. How to arrange and educate the influx of children from different backgrounds, with different abilities and futures? According to Novak, until the mid-1920s ". . . America in its top and middle layers had been, politically and culturally, a fairly homogeneous society."[94] But growing immigration from Southern and Eastern Europe encountered racism and prejudice. Some felt that the immigration flow had to be managed.

At the same time, genetics became a modern science with the republication of Mendel's research and the work of Galton and Darwin. This gave the popular "social eugenics" movement—a group which said that heredity determined behavior—a scientific basis for its campaign to promote the quality of the American people by weeding out so-called genetically inferior "degenerates." These were believed to include criminals, paupers, alcoholics, the feeble-minded and the insane. These people were to be discouraged from breeding. But a crucial question remained: how could "fit" and "unfit" be accurately quantified?

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[91] Ibid, passim.
[92] Gould, op. cit. p. 155.
[93] Boyer, Ernest L. High School. New York, Harper and Row, 1983. p. 46–55.
[94] Novak, Michael. The Rise of the Unmeltable Ethnics. New York, Collier Books, 1971. p. 170.

The quantification and widespread application of the Binet scale gave some researchers a false sense that I.Q. number scores measured intelligence and other factors that presumably were determined by heredity. This is called the "reification of intelligence." Basically the public believed that if there was a measure, then it was assumed that the professionals knew what they were measuring.

c. New generations of the I.Q. test

The key to the creation of mass intelligence testing from Binet's individual test was the Army Alpha and Beta tests. They were developed by a group of psychologists, including Lewis Terman, developer of the Stanford-Binet scale, and H.H. Goddard. The tests were designed specifically to determine the abilities of the Army recruits who participated in the massive build-up for World War. I. The written Alpha and the picture Beta were supposed to indicate which recruits would be good officers. The tests' validity and reliability have been questioned. But their use, alone, accomplished three things for the discipline of psychology. It showed that mass administration of a standard test could be accomplished. Second, the test results became the core of a data base that would be used widely in psychological research. And third, publication of the data results was used by some psychologists and administrators who concluded that intelligence was ethnically determined.[95]

The I.Q. scores of different nationalities and races were compared and contrasted. The influence of nature versus nurture on intelligence became an issue. Walter Lippmann and Lewis Terman were drawn into a debate which appeared for over a year in the pages of *The Atlantic*, the *New Republic*, and other publications.[96] Although there was some challenge to the tests and the data analysis in professional journals, a concept of intelligence had been accepted.

By World War II the use of mass intelligence testing had become a widely used and, according to some reports, effective testing procedure in American society. It should be noted that subsequent refinements of the I.Q. test and related skill or ability tests are generally considered to have been valid and effectively used. There is some evidence that many World War II U.S. Army Air Force pilot trainee's lives were saved by implementing aptitude testing to screen out persons without the aptitude for flying.[97] There are also studies which describe the benefits of using specialized aptitude tests in educational placement and employment selection.[98]

However, historically the original I.Q. test was used, erroneously some believe, to legitimate some decisions or to justify popular be-

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[95] Cronbach, Lee J. Public Controversy Over Mental Testing. In Frankel, Charles, ed. Controveries and Decisions: The Social Sciences and Public Policy. New York, Russell Sage Foundation, 1976. p. 140.

[96] See for example, Melton, A. W. ed. Apparatus Tests. Army Air Force's Aviation Program Research Report No. 4. Washington, U.S. Govt. Print. Off., 1947. Passey, G.C. and W.A. McLaurin. Perceptual, Psychomotor Testing in Air Selection: Historical Review (PRL-TR-66-4), Lackland Air Force Base, Texas. U.S. Air Force Personnel Research Laboratory, 1966.

[97] Schmidt, F.L. and Hunter, J.L. Employment Testing: Old Theories and New Research Findings. American Psychologist, v. 36, 1981: 1128–1137.

[98] Schmidt, F.L., et. al., The Impact of Valid Selection Procedures on Workforce Productivity. Journal of Applied Psychology, v. 64, 1979: 609–626.

liefs. Despite controversy, the test and the reification of a concept of intelligence came to aid in the solution of some policy problems in the areas of education, immigration, and institutionalization. Several examples are described next.

d. Use of the I.Q. test in education

School administrators used an I.Q. test, the National Intelligence Tests, designed by Terman, Yerkes, Thorndike, and others. The results frequently were used to rank students of different ethnic backgrounds according to intelligence and the potential for learning. Curricula were modified to create different tracks or "educational streams." "The testers intended to shield the child destined to be a worker from the rigors of an academic curriculum," stated Lee J. Cronbach. He noted that ". . . the wisdom of sorting pupils into distinct programs deserved public scrutiny it did not get. Streaming was the obvious answer to the problem of laggards and drop-outs in the efficiency-minded decade.[99] The I.Q. test provided a solution, and the growing controversy over heritability of intelligence obscured the philosophical issues and questions of validity of the test.

Educational use of intelligence and aptitude tests has been an area of continuing controversy. Arthur Jensen's article in *Harvard Educational Review* in 1969, "How Much Can We Boost I.Q. and Scholastic Achievement?" unleashed a new volley in the nature versus nurture controversy. References to the differences in the average I.Q. scores of blacks and whites focused on questions of heredity.

Over the decades geneticists and psychologists have challenged and revised the view of the dominance of heredity as the sole determinant of intelligence. Current studies view intelligence as a "polygenic model," where several genes work together to create a trait or where I.Q. is a measure of many separate abilities, some of which are determined by the social environment.[100] And there is evidence that one form of mental retardation, specifically pheylketonuria (PKU), results from a gene-environment interaction, which may be corrected by early detection and appropriate diet. PKU can be detected at birth. As of 1970, 43 states had mandatory PKU-screening laws.[101]

e. Use of the I.Q. test in immigration policy

C.C. Brigham, who later became secretary of the College Entrance Examination Board, published *A Study of American Intelligence* in 1923. In it he claimed that "these Army data constitute the first really significant contribution to the study of race differences in mental traits . . . a scientific basis for our conclusions." [102] Although years later he disavowed his studies in a pro-

[99] Cronbach, op. cit. p. 142-143.

[100] See for example, Glaser R., and L. Bond, eds. Testing: Concepts, Policy, Practice, and Research. American Psychologist, v. 36, 1981; Wigor, A. and Garner, W.R. Ability Testing: Uses, Consequences, and Controversies. Washington, National Academy Press, 1982; and Gardner, Howard. Frames of Mine: The Theory of Multiple Intelligences. New York, Basic Books, 1983. 440 p.

[101] Burns, George W. The Science of Genetics: An Introduction to Heredity, fifth ed. New York, Macmillan Publishing Co., Inc., 1980. p. 327.

[102] Gould, Mismeasure of Man, p. 224.

fessional journal, there is evidence of an association between his research and the prevailing racial restrictions of his time. Although a recent analysis attempts to refute the conclusion that I.Q. tests were important in the formulation of immigration policies,[103] there were widespread perceptions at the time that these tests were important influences on major parties to policy decisions. In addition the *Encyclopedia of Bioethics* noted that the Immigration Restriction Act of 1924 had a selective restriction clause "which limited the entry of individuals from Southern and Eastern Europe on the grounds that they were biologically inferior." [104] Cronbach concluded, however, that the more restrictive immigration law would have been enacted even without the Army data.[105]

f. Use of the I.Q. test in policies for the feeble-minded

Many of the psychologists who led in the design of intelligence tests, were also involved in the debates of the eugenics movement. Intelligence, as measured by the I.Q. test, became accepted by many as a fixed, genetically determined trait carried by one gene. A person's potential could be predicted early in life.

The studies of H. H. Goddard, conducted at the Vineland Training School for Feeble-minded Girls and Boys, contributed a vital link in the theory. In *The Kallikak Family: A Study in the Heredity of Feeble-mindedness,* written in 1912, Goddard assumed that there was a single, linear measure of intelligence, something Binet had not intended, and that intelligence was a unitary gene trait, along the lines of Mendel's work. Making these assumptions, he constructed a genealogy of the Kallikak family based upon Binet scores of a child in the institution, interviews with family members, and hear-say about the behavior of deceased family members. From this he concluded there was a hereditary basis to feeble-mindedness.[106]

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[103] See Synderman, M., and R. J. Herrnstein. Intelligence Testing and the Immigration Act of 1924. American Psychologist, 1983, v. 38. p. 986–955. They concluded in part: "Summarizing our examination of the Congressional Record and Committee Hearings: There is no mention of intelligence testing in the Act; test results on immigrants appear only briefly in the committee hearings and are then largely ignored or criticized, and they are brought up only once in over 600 pages of congressional floor debate, where they are subjected to further criticism without rejoinder. None of the major contemporary figures in testing—H. H. Goddard, Lewis Terman, Robert Yerkes, E. L. Thorndike, and so on—were called to testify, nor were any of their writings inserted into the legislative record. The overlapping distributions of test scores for various national and racial populations would probably have created more problems for the Act's proponents than for its opponents, which may help explain why the intelligence testing movement of the early 20th century left so few traces in the record. The examples of fascism occasionally evident in both early psychometric writing and the Immigration Act do not appear to be casually related to each other. Rather, each reflects in its own way a crest in the long history of American Anglo-Saxonism, anti-Catholicism, and anti-Semitism, following World War I (Highman, 1973).

"We have examined, and found wanting, two common allegations about intelligence testing in its early days, namely, that the hereditarian interpretation of ethnic and racial differences went largely unchallenged and that those differences were a significant factor in the passage of the Immigration Act of 1924. But the historical record contains challenges aplenty, even among tester, and nothing in the record suggests an important role for tests in the formulation or enacment of immigration policy. The allegations are usually offered as evidence of the sinister influence of tests and of their affinity to reprehensible political purposes, in this case a restrictive immigration law. Even if the allegations were true, it would be an odd argument—a form of guilt by association—to blame the tests rather than the political process that allegedly appropriated them for reprehensible ends. But, as it turns out, the record fails to show testing guiltily associated as charged."

[104] Ludmerer, Kenneth, M. History of Eugenics. In Reich, Warren T., ed. Encyclopedia of Bioethics, v. 1. New York, MacMillan Publishing Co., Inc., 1978. p. 460.

[105] Cronbach, op. cit. p. 142.

[106] For further information on the Kallikak family study, see Smith, J. David. Minds Made Feeble: The Myth and Legacy of the Kallikaks. Rockville, Aspen Publications, 1985.

Many professionals accepted the basic assumptions of his research and the notion that heredity determined feeble-mindedness. The validity of his scale was challenged by Terman and the accuracy of his interviews was suspect. But Goddard's work supported sterilization of the feeble-minded as a makeshift public policy solution to the spread of feeble-mindedness until all the feeble-minded could be segregated into colonies, such as his own institution.

In Buck v. Bell, a 1927 Supreme Court case involving the State of Virginia and a young woman committed to the State Colony for Epileptics and Feeble-minded, the Court upheld the State's right to cumpulsory sterilization of an individual judged to be defective.[107] Evidence in the case included test scores indicating mental age, family history, information gathered by a field worker of the Eugenics Record Office, and references to Goddard's Kallikak study. Justice Oliver Wendell Holmes stated in the majority opinion that "The principle that sustains compulsory vaccination is broad enough to cover cutting the fallopian tubes. . . . Three generations of imbeciles is enough." [108] As of 1931, thirty states had passed compulsory sterilization measures as applied to "hereditary defectives." [109] The policy of institutional sterilization continued in Virginia into the early 1970s.

The Supreme Court has never overruled the Buck versus Bell decision, but the case appears to have become generally unacceptable precedent in light of current interpretations of basic civil rights law. The social values of the present time have also changed with respect to concepts of equal protection rights and the place of mentally retarded persons in society. This is illustrated by the following case.

In the July 1, 1985, Supreme Court decision regarding the City of Cleburne, Texas, versus Cleburne Living Center, Inc., it was ruled that requiring a special use permit for a proposed group home for the mentally retarded would deprive the residents of the equal protection of the laws. The city had sought to classify the group home as a "hospital for the feeble-minded" under the established city zoning code. The Supreme Court found that "requiring the permit in this case appears to rest on an irrational prejudice against the mentally retarded." [110] In the concurring judgment of Justices Marshall, Brennan, and Blackmun, the studies of Goddard and Terman are cited as sources of the questionable view that the "feeble-minded" are a menace to society and civilization. . . . responsible in a large degree for many, if not all, of our social problems." [111]

In its opinion, the court cited an alternative definition for mental retardation, with four classifications according to I.Q., and mentioned that "mental retardation is not defined by reference to intelligence or I.Q. alone, however." I went on to state that it is caused by a "variety of factors, some genetic, some environmental, and some unknown." [112] Clearly advances in diagnostic science, im-

[107] Smith, op. cit. p. 139.
[108] Smith, op. cit. p. 150.
[109] Ludmerer, Eugenics, p. 459. See also Ludmerer, Kenneth M. Genetics and American Society: A Historical Appraisal. Baltimore, Johns Hopkins University Press, 1972. passim.
[110] Cleburne v. CLC No. 84-468, slip op. at p. II (U.S. July 1, 1985).
[111] Cleburne v. CLC No. 84-468, slip op. at p. 7 (U.S. July 1, 1985).
[112] Cleburne v. CLC No. 84-468, slip op. at p. 8 (U.S. July 1, 1985).

provements in psychological testing methods, changes in social attitudes and concepts of legal rights, and genetic research have changed ways to conceptualize and measure I.Q., skills, and abilities.[113]

[113] For an overview of current measurement perspectives, see: Wigor, Alexandra, and Wendell Garner, ed. Ability Testing: Uses, Consequences, and Controversies, Parts I and II. Report of the Committee on Ability Testing. Assembly of Behavioral and Social Sciences, National Research Council. National Academy Press, 1982; and Horowitz, F., and M. O'Brien. The Gifted and Talented: Developmental Perspectives. American Psychological Association, 1985.

XI. APPROACHES TO ENHANCE UTILIZATION OF BEHAVIORAL AND SOCIAL RESEARCH IN POLICYMAKING

The material presented in the last chapter summarized the complex factors which affect the actual utilization of behavioral and social research in policymaking as well as measurement of use. Some of these factors are inherently contradictory, thus they present serious dilemmas to research utilization. Research information may be perceived as irrelevant to policymaking because it is too piecemeal or not representative, yet wholistic research or basic research may take too long to complete and may not address organizational or political aspects of decisionmaking which affect utilization. Often recommendations are rejected for political infeasibility or because decisionmakers prefer scientists to be neutral and objective, yet knowledge may not come to the attention of decisionmakers unless scientists become involved with application or implementation. Research knowledge may be rejected as a guide to policy change if it does not coincide with or reinforce the prevailing consensus or views about problem solution. This may constitute *a priori* rejection of information which challenges the *status quo* or governmental policies.

Summarized in this chapter are some major recommendations that have been made to enhance utilization of the behavioral and social sciences in policymaking. These may help overcome some, but certainly not all, of the obstacles and dilemmas identified in the previous chapter. The chapter deals with: expanding governmental support for anticipatory basic research and related studies, lowering expectations for utilization, improving the intelligibility of reports, considering the issue of implementation, improving linkages between decisionmakers and scientists, creating Government-funded policy research units, improving information dissemination, addressing the notion of research broker, use of other media, and policy sciences. It also includes a summary and concluding comments on utilization.

A. The Need To Fund More Relevant, Long-term, Anticipatory Research While Meeting Government Needs for Short-Range Studies

Efficiency and effectiveness of utilization would be enhanced, according to most observers, if Government priorities and funding for behavioral and social research and development focussed more on the major problems Government confronts. Such a reorientation calls essentially for more longer-range, anticipatory, and generally, basic research. For instance, in a National Academy of Sciences study, Wilson concluded that Federal agencies ought to support the conduct of more anticipatory social research, and social experimentation long before the bureaucracy needs to make programmatic or

policy decisions.[1] Similarly it was concluded in the National Academy of Sciences report *Behavioral and Social Science Research: A National Resource* that even though there is an "uncertain, incomplete, and often slow . . . coupling between basic research in the behavioral and social sciences and its applications to public policy. . . . " this link is "significant and growing." [2] As a result ". . . a disinterested, long-term program of support carried out as a broad, farsighted investment policy rather than to meet the immediate policy objectives of particular agencies, is in the national interest." [3]

These are not insignificant recommendations, in view of the fact that on average for the last twenty years, 70 percent of Federal support for behavioral and social sciences has customarily gone to support applied work, and far less, that is about 30 percent, has gone to support basic research.

The final report of the Study Commission on Social R&D addressed this issue. It noted that the Federal Government needs to fund both long-range and short-range research in order to be able to respond to the needs of the policy process, but that additional investments in "research that requires longer time for a significant return" needs to be considered. The report concluded that "The need to devise ways of supporting such longer-term research is an unresolved issue of federal investment in knowledge of social problems." [4] The Commission made a series of recommendations to help agencies manage and allocate their research resources for these fields. They are premised on the assumptions that agencies: (1) should use different kinds of criteria to fund policy oriented as opposed to longer range basic research, (2) need to develop mechanisms to coordinate agenda setting among the various offices' and bureaus' users of information and (3) should plan ahead to maximize the application and use of research information in decisionmaking. The recommendations are:

> Federal research administrators and oversight officials should devote more resources to developing systematic planning as a distinct aspect of efforts to produce and use knowledge of social problems.
>
> Program decision makers should have greater input into the planning of program-supporting research and policy makers at the departmental and presidential levels and in Congress should have greater input into the planning of policy-forming research.
>
> Special attention should be given to building problem-exploring research agendas through task forces and conferences and the creation of presidential or joint presidential-congressional temporary commissions.
>
> A number of problem-centered research programs should be created to undertake intensive and sustained work on major social problems.

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[1] Wilson, Social Science and Public Policy, op. cit., pp. 91-92.
[2] Behavioral and Social Science Research: A National Resource, v. 1, op. cit., p. 96.
[3] Ibid., p. 102.
[4] Federal Investment in Knowledge of Social Problems, op. cit., p. 69.

More adequate methods should be developed for forecasting new or emerging social problems and creating research agendas directed to them.

Users of research-based knowledge outside the government should be more closely involved in establishing priorities for research that is meant to benefit them.

Scientific criteria, rather than problem or policy relevance, should guide the setting of priorities for research that seeks to enlarge the general resources of social knowledge or method.[5]

Social scientists themselves have suggested a variety of criteria, agendas, and priorities for the support of work which will have most policy utility. One is to support more fundamental theoretical work. One of the major conclusions to emerge from Berger's assessment of the case studies in the OECD study, *The Utilisation of the Social Sciences in Policy Making in the United States,* is that in the current era of budgetary stringency "policymakers are tempted to resort to [funding] those kinds of research that produce predictable results, rather than to fund the open-ended and often apparently unspecified efforts that might (or might not) lead to new paradigms." This produces the "new illusion", leading to inefficiency and ineffectiveness in research investments, "that scientists can work out of the stock of existing theories with a high return for public policy."[6]

She identified the most useful, effective, and efficient kind of research as "paradigm challenging" work [7]—research whose outcome cannot be specified in advance and that fundamentally is long-range and basic in nature because it gives "maximum latitude to the researchers. . . ."[8] This kind of research is important, but poses a fundamental dilemma since it is "the research that challenges the established assumptions, theories, and practices underlying policy [and] has the highest pay-off for the policymakers."[9] Unlike other kinds of social research "paradigm challenging" research can point out weaknesses in current policy and identify new solutions. Berger elaborated as follows:

> . . . [T]he pay-off for the development of new paradigms may be very high indeed, not only for science but for policy. When new paradigms replace old ones, facts and methodologies which once appeared irrelevant to the understanding and solution of a problem may be revealed to be critical. The simultaneous existence of unemployment and unfilled jobs in the urban ghetto, a fact that neoclassical labour market theory (to the extent that it noticed it at all) treated as anomalous and transitory, in the new dual labour market theories become a key to the operations of the system. To continue with this example, policy-makers who adopted the new paradigm would find themselves forced to collect statistics different from those they

[5] The Federal Investment in Knowledge of Social Problems, op. cit., 1978, p. 5–6.
[6] Berger, op. cit., p. 24.
[7] A term whose origin she attributed to Martin Rein in Values, Social Science and Social Policy. Working Paper no. 21, Joint Center for Urban Studies of the Massachusetts Institute of Technology and Harvard Univeristy, June 1973, pp. 37–39, *In* Berger, op. cit., pp. 22–23.
[8] Berger, op. cit., p. 24.
[9] Ibid., p. 23.

> thought they needed when operating under the old assumptions; and they would have to consider a new set of methodologies. Most important, the new theory opens the prospect of new strategies for action, since the variable it identifies as critical to the problem are different from those which the old policies had attempted to manipulate. In this way, new theories enlarge the set of alternatives available to policy-makers and widen the range of political choice."[10]

There is also the belief that it is the Federal Government's responsibility to support more "generic", longer range social research, that produces findings "generalizable across disciplines" and agencies. Tornatzky and Solomon, who wrote about this issue, said however, that more effective interagency coordination would be needed to achieve these objectives.[11] This issue was addressed also during hearings held by the Task Force on Science Policy on the subject of the behavioral and social sciences by Clark C. Abt, president of Abt Associates, a consulting firm. He testified that "Government social science R&D is undertasked on our most important social and economic problems, yet overcommitted to the more marginal issues of social problem administration. Congress, he recommended should rectify this situation by asking "the most important national economic and social policy questions of the social science R&D community," including cross-cutting R&D "which is not part of any single agency's or discipline's mission. . . ."[12]

A recommendation for the Congress, through the Congressional Budget Office, (CBO) to contract for and oversee the execution of some social policy research was made by James S. Coleman, at these same hearings. Coleman, a social scientist with the University of Chicago and the National Opinion Research Center, justified this recommendation as follows:

> First, since policy is made in Congress through legislation, then Congress is a natural locus for such research; and second, the multi-headed character of Congress which for some purposes is a defect is an asset here, for it can

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[10] Berger, op. cit., p. 24.

[11] Tornatzky and Solomon, op. cit., p. 9.

[12] Abt, Clark C., Improving Government Efficiency With Social Sciences Research. Testimony to the Committee on Science and Technology, U.S. Houses of Representatives, Sept. 18, 1985. Abt identified top 12 fundamental issues, which he said require cross-cutting social R&D. In some cases he suggested the agency's that could utilitze the research:

1. Deficit reduction integrated with fairer and more productive taxes.
2. Better, more widely shared and more affordable health care.
3. Reversing the decline of the American family, now with one-fifth of all births illegitimate.
4. Preventing the corruption of the youth by drugs.
5. Improved educational productivity.
6. The social and economic security of the elderly.
7. Countermeasures and deterrents to international terrorism and its threat to become nuclear.
8. World poverty and starvation, and its fomenting of revolutionary conflicts.
9. United States maintenance of deterrence of nuclear war and aggression, and enhanced reassurance of allies and domestic publics.
10. Improved United States International industrial competitiveness.
11. Continuation of United States world scientific and technological leadership.
12. Continuation of United States world moral leadership supporting justice, peace, prosperity, and freedom for all nations.

(Ibid., pp. 8–9.)

> help insure the pluralism of social, policy research design.[13]

Scott and Shore attributed much of the ineffective use of sociology to social scientists themselves. Social scientists, they said, should do research which is both "relevant" and "interesting" not only "interesting." This does not preclude doing basic work or maintaining scientific freedom and independence. But it means doing research about fundamental issues that need to be resolved before policy can be enacted, and generating knowledge which "enables the sociologist to anticipate and study in advance issues and questions that eventually come up in policy deliberations." [14] They identified these fundamental issues as follows:

> goals (i.e., what shall be the objective of a program?); coverage (i.e., who shall benefit?); financing (i.e., how shall the program be administered); who (i.e., who shall be responsible for implementing the program and how shall it be put into effect?); equity (i.e., of those who are covered by the program, who shall receive what kinds of benefits?); and time frame (i.e., for what period of time shall the program last?) [15]

Several other kinds of social science research were cited as especially relevant to policy and warrant more attention and funding according to several witnesses at hearings held in 1985 by the Task Force on Science Policy on the subject of Behavioral and Social Research. One type is longitudinal studies—for instance following "an appropriate sample of children and adolescents . . . over a period of years, perhaps even decades . . ." to identify events in life, or how societal interventions affect social behavior. Neil J. Smelser, University Professor of Sociology at the University of California, Berkeley, during the House Committee hearings, identified longitudinal studies as especially critical to understand why criminal careers may be started and how factors such as probation, imprisonment, educational programs, or community development programs affect or deter criminal behavior.[16]

Expanding governmental funding for social experimentation may be another way to enhance the efficiency and effectiveness of Federal investments in policy relevant behavioral and social research. Joseph P. Newhouse testified at the same hearing that ". . . experiments are quite rare. In my view, they are too rare. I believe a certain modest portion—perhaps 11 to 20 percent of research budgets for applied public policy research—should be set aside for randomized experiments." He suggested that the Government rarely funds such experiments now because "they take a long time to yield results . . . ," they appear expensive, and they may be politically risky.[17]

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[13] Testimony, p. 9.
[14] Scott and Shore, op. cit., p. 211.
[15] Ibid., p. 209.
[16] September 17, 1985, pp. 5–6.
[17] Newhouse, Joseph P. Experimentation as Part of a Social Science Research Strategy. Testimony before the Subcommittee on Science Research, and Technology, House Committee on Science and Technology, Sept. 18, 1985, pp. 5–7.

Several analyses have indicated that behavioral and social scientists might have been more effective in the deliberations of some presidential and other policy commissions if there had been more long-term, fundamental, anticipatory research available to permit scientists to anticipate and cope with the urgency of quick turn around times and the pressures of advocacy groups with stakes in the recommendations made. Wilson described in detail how long-range research might have enhanced the work of three commissions.

The Kerner Commission, the National Advisory Commission on Civil Disorders, was asked by President Johnson to discover "the basic causes and factors leading to 'civil disorders.' " It concluded that "white racism," was the cause, and that it led to segregation; black migration to big cities, accompanied by white exodus; and impoverished ghettos. Wilson contended that data did not demonstrate these conclusions.

He also reported that the National Commission on the Causes and Prevention of Violence produced 15 volumes of excellent research, but that its conclusions were not based on this research, but "on unexamined causal premises, untested ideas, and unstated facts." For instance, Wilson said that the commission recommended that major infusions of welfare expenditures would halt violence (an unproven assertion) and that the commission's recommendations that there be less violence on television and in movies was not supported by the research done by the commission.

The obscenity commission, according to Wilson "recommended repeal of federal, state, or local laws prohibiting the sale, exhibition, or distribution of sexual materials to consenting adults," basing its recommendations on research it had conducted. However, according to Wilson, the research findings were inadequate: "long-term effects could not be investigated by a commission with only a two-year existence; there were almost no studies of the effects on children; and the behavior of volunteer . . ." subjects in experiments could not be generalized to any known population." [18]

Robert K. Merton, a sociologist with long experience, recommended that in order to accumulate the kind of knowledge commissions of this nature need, the professional associations, the American Sociological Association, and the Social Science Research Council, and other ". . . organizations should take it upon themselves, separately or in concert to initiate continuing research programs designed for use by functional equivalents of government commissions." This work could be done independent of the "immediacies of political expediency" and it ". . . could generate terms of reference for programs of policy-oriented research in the particular sphere of a problem, without the strong pressures of urgency that have typically limited work done directly for Congressional and Presidential Commissions." [19] The American Anthropological Association endorses these views.[20]

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[18] Wilson, Social Science and Public Policy, op. cit., pp. 84–85.

[19] Merton, Robert K. Social Knowledge and Public Policy: Sociological Perspectives on Four Presidential Commissions. In Komarovsky, Mirra. Sociology and Public Policy: The Case of Presidential Commissions. Edited by Mirra Komarovsky, New York, Elsevier, 1975, pp. 176–177.

[20] Letter: David B. Givens, American Anthropological Association to David Jenness, Consortium of Social Associations, Nov. 1, 1985.

B. Recommendations for Lower Expectations

There is also the view that policymakers as well as social scientists have held overly ambitious expectations of what the social sciences can contribute to policymaking.[21] The point of view has been expressed by some U.S. as well as foreign behavioral and social scientists.[22] Some, including those who are scientists with long experience serving Government's behavioral and social science information needs, have recommended that expectations be curtailed. Herbert A. Simon, a psychologist and economist, and Nobel prizewinner, wrote in an essay published in 1982, that social science can contribute answers to specific programmatic issues—for instance compensatory education, problems of aging, some aspects of criminal behavior, and organizational decisionmaking. But it cannot do much to help government solve the major enduring societal problems such as war, deterrence, poverty, and disease.[23]

James Q. Wilson concluded that behavioral and social scientists' best work for Government consists of evaluating, and not designing new programs or policies:

> To me, social scientists are at their best when they evaluate an actual government program, when they ask what happens when the government does x, y, or z. They're at their worst when they assume that measuring variables in a situation will tell them what will happen when one of the variables changes.[24]

Daniel P. Moynihan, now senior senator from New York, came to a similar conclusion when he was a practicing social scientist: "The role of social sciences lies not in the formulation of social policy, but in the measurement of its results."[25] His views, undoubtedly, were shaped by the criticisms made of his work. The Moynihan report concluded that social deviance among blacks was caused by a breakdown in the black family structure. This view was politically unacceptable and the report, as a result was politically discredited, since at that time, the conclusions diverged from what was expected: that the fault would lie with society and, the solution with eradicating issues of economic and social prejudice.

C. The Need To Improve the Intelligibility of Reports

There are also recommendations that social scientists should improve the intelligibility of their reports by avoiding lengthy jargon-laden tomes. Several social scientists have addressed this point, for instance Marc Roberts:

> . . . I want to urge the demystification of social science. Communication with nonexperts has to become a responsibility of all scientists, social and natural—a responsibility

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[21] See for instance, the series of views in the symposium on: Is Social Science A God That Failed? Public Opinion, Oct./Nov., 1981: 11-15. See especially the views of Irving Kristol, p. 12.

[22] See for instance: Kallen, D.B.P. et. al., eds. Social Science and Public Policy-making: A Reappraisal. London, NFER-Nelson Publishing Co., 1982, 375p.

[23] Simon, Herbert A. Are Social Problems Problems That Social Science Can Solve? *In* Kruskal, op. cit., pp. 1-20.

[24] Wilson, James Q. In: Is Social Science A God That Failed? op. cit., p. 15.

[25] Moynihan, Daniel P. Maximum Feasible Misunderstanding. Community Action in the War on Poverty. New York, The Free Press, 1969, p. 193.

> which is shirked when experts are not explicit about the role of values and judgments in their work, and use jargon and mathematics as professional status symbols. There is no reason to put something in a complex and inaccessible manner when the argument is inherently simple and potentially easy to understand. The problems of democratic policymaking are difficult enough without this added complication.[26]

In addition, sometimes social research "investigators . . . regard a research grant as a personal benefice rather than a commitment to produce knowledge;" and then there are some ". . . government sponsors . . . who try to cover up research reports that reveal their agencies or programs in an unfavorable light." [27]

D. The Need To Consider Issues of Implementation

The implementation issue means basically that the utilization of behavioral and social science information in policymaking may be constrained if researchers do not specify or suggest decision options, if they do not study and make recommendations regarding alternatives in the design, administration and implementation of a program, and if program follow-up is not conducted. This set of conclusions is based on the notion that means and ends in achieving policy objectives are interrelated and that behavioral and social scientists need to be concerned about both. There have been a number of useful case studies dealing with this issue, notably a study on the Economic Development Administration in Oakland, California, as described in the book *Implementation* by Pressman and Wildavsky [28] and in Hargrove's review.[29]

Some researchers suggest that weak linkages between social theory and social policy will continue until deliberate attempts are made to involve social researchers in implementation, so that they can explore the effects of program options on achieving desired outcomes in the real world, in a process akin to the development phase of natural and physical sciences research and development. However, the costs of such an approach and the commitment required by both scientists and policymakers probably would be enormous. A current issue which illustrates the necessity for follow-through on implementation is the problem associated with deinstitutionalization of mental health patients. Increased use of drug therapy permitted patients to leave hospitals, but, some observers have concluded, there was little anticipation of the need to maintain community mental health centers and support networks for people who could cope only marginally with social demands. As a result, the number of deinstitutionalized people who are living on the streets appears to have increased markedly.[30]

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[26] Roberts p. 62, in Kneso, op. cit., p. 538. See also Andreski, Stanislav. Social Sciences as Sorcery. London, Andre Deutsch, 1972, 238 p.

[27] Weiss, Improving the Linkage . . ., op. cit., p. 57.

[28] Pressman, Jeffrey L. and Aaron Wildavsky. Implementation: How Great Expectations in Washington Are Dashed in Oakland. Berkeley, University of California Press, 1973, 182 p.

[29] Hargrove, Erwin C. The Missing Link. The Study of The Implementation of Social Policy. Washington, The Urban Institute, 1975, 128 p.

[30] See for example: Lyons, Richard D. How Release of Mental Patients Began. New York Times, Oct. 30, 1984: C1, C4.

Gerard dealt with this issue in the field of desegregation policy:

> Social scientists were wrong in the belief that change would come easily. There are so many resistances to overcome, many of which should have been anticipated, but many of us were blinded by our ideology into thinking we could have our utopia in one fell swoop of mandated busing. Simply mixing children in the classroom and trusting to a benign human nature could never have done the trick. . . . Social scientists have to start learning how to engineer effective integration. . . . We in the social sciences have missed the essential R and D link in the chain of applying ideas to practical problems. . . . We are going to have to follow something of the implementation model used by the hard sciences so that when we make recommendations about how to deal with an issue like school segregation, we have the facts and experience to back us up. This can only be done with careful research . . . and try to apply it on a small scale at first to the school setting with a laboratory-like approach. . . . In the process we will be forced to go back to the drawing board many times until we develop a program that will really work.[31]

If it is necessary for social scientists to do work in implementation then many would have to delve into program and policy formulation and administration, fields that may be quite alien to their previous training and experience. They also risk losing or being accused of losing, their objectivity and credibility. As a result, some scientists avoid recommending policy options.

E. The Need for Improved Linkages Between Decisionmakers and Scientists

There is a considerable body of literature in the social sciences, especially in the field of program evaluation, which counsels that dissemination and utilization will be enhanced if decisionmakers are involved in the research: mutually defining the problem and study objectives with researchers and, during the analysis phase, seeking the contribution of decisionmakers or users in drawing conclusions.[32]

F. Government-Funded Policy Research Units To Enhance Decisionmaking

There have been several attempts by Federal agencies to set up policy oriented research institutes to develop an anticipatory, policy oriented body of research findings. For instance, among these institutional innovations are the Rand Corporation that was

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[31] Gerard, Harold B. School Desegregation: The Social Science Role. American Psychologist, Aug. 1983: pp. 875–876.

[32] For a review of the major views, such as by Williams and Evans, see: Knezo, Genevieve J. Program Evaluation: Emerging Issues of Possible Legislative Concern Relating to the Conduct and Use of Evaluation in the Congress and the Executive Branch. In U.S. Congress. Senate. Committee on Government Operations. Subcommittee on Oversight Procedures. Legislative Oversight and Program Evaluation. A Seminar Sponsored by the Congressional Research Service, Library of Congress. 94th Congress, 2d sess. Washington, U.S. Govt. Print. Off., 1976, pp. 516–522 (Committee print.)

established with Air Force funds after World War II. The Urban Institute was created in 1968 with funding supplied by the Department of Housing and Urban Development. There were also the Wisconsin Institute for Research on Poverty, funded by the Office of Economic Opportunity; the Office of Education's R&D Centers, educational labs, and educational policy centers; and the Social and Rehabilitation Service's regional research institutes.[33] These units have had mixed results. Some, however, have earned notable respect in policymaking communities. Generally they were awarded long-term research support of about five years or more, general program guidelines were mutually agreed upon, but researchers typically were given considerable latitude to choose their own topics for study.[34]

There have been several recommendations over the last thirty years to create other "generic" social policy oriented research units. The BASS committee of the National Academy of Science, in 1970, recommended the formation of a Graduate School of Applied Behavioral Science—one large and diffuse academically oriented research institute in Washington, to conduct multidisciplinary research dealing with social problems.[35] Shortly thereafter, the National Science Board of the National Science Foundation called for the creation of several research units throughout the country designed to conduct research in a particular functional area for the Government and other clients.[36] There have been other proposals to create new institutions to conduct social or interdisciplinary policy research for the Government at various levels. These are based on the presumption that existing funding programs do not provide the Government with the kind of research it needs and that these units would provide better interaction between scientists and decisionmakers. These proposals were summarized in a report of the House Committee on Science and Astronautics in 1974:

> These proposals include, for instance, the recommendation of the House Committee on Science and Astronautics to create a National Institutes of Research and Advanced Studies, and Etzioni and Remp's proposal for an Agency for Technological Development. Alton Frey, a political scientist, has made a related proposal, to establish an early warning Institute for the Congress, staffed by experts who would do in-house research for legislative committees on major problems. One of the special features of Frey's Proposal deserves attention: policy reports would assess the political connotation of various policy alternatives.[37]

Recent recommendations have included a suggestion to establish national interdisciplinary supercomputer centers to do advanced work in such areas as brain mapping, language studies, neural study, and developmental psychology. These proposals were offered by R. Duncan Luce, Victor S. Thomas professor of Psychology at

[33] Weiss, Improving the Linkage . . . op. cit., pp. 65–66.
[34] Ibid., pp. 50, 51.
[35] Behavioral and Social Sciences: Outlook and Needs, op. cit., pp. 11–12.
[36] Knowledge Into Action; Improving the Nation's Use of the Social Sciences, op. cit., pp. xix-xx.
[37] Kneso, op. cit., pp. 558–559.

Harvard University at hearings before the House Committee on Science and Technology, Sept. 1985. Describing current problems, he said, "The existing centers are all focused on engineering and physical problems, and it is difficult for behavioral and social scientists to gain access to them . . ." [38] Luce estimated these supercomputer centers would cost about $10–$15 million apiece and would have annual operational budgets of about $1 to $2 million.[39]

G. The Need for Better Information Dissemination

Federal agencies have also set up a variety of formal arrangements to improve utilization by enhancing the distribution of social research findings within an agency. These were surveyed by Weiss in 1978. For instance, in 1972–1973, the Department of Health, Education, and Welfare required research managers to write policy implication papers (PIPS) including statements of the implications for policy of the research they had funded. These were to be distributed to managers throughout the department. "PIPS flopped . . ." according to Weiss because:

> Not only was the work load severe, but also the research managers did not know what programs were run in the enormous department, who ran them, what their policies were, or what research might relate to them. Further, they were acutely uncomfortable trying to generalize policy recommendations for other people's programs on the basis of one or two studies.[40]

There were other kinds of dissemination mechanisms: an abstracting service established by the Office of the Assistant Secretary for Planning and Evaluation in the Department of Health, Education, and Welfare during the early 1970s; followed by an NSF program to fund critical syntheses of policy oriented interdisciplinary social research.[41] None of these systems were maintained, perhaps because they were not very effective. Weiss also reported that Nathan Caplan studied the utility of computerized information systems in helping to disseminate social research reports and concluded they "seem to be of little use to decisionmakers." [42]

The "ineffective and uncoordinated" dissemination of the results of social research and development was one of the major factors that hindered the utilization of social research and development in the Department of Health, Education, and Welfare, according to the General Accounting Office in a 1977 report to the Congress.[43]

H. The Concept of Research Broker

Some social scientists have concluded that decisionmakers will become familiar with the findings of behavioral and social research only if it is mediated or translated through trusted advisors or as-

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[38] Testimony, p. 12.
[39] See also: Holden, Constance. Social Scientists Make Case to Congress. Science, v. 230, Oct. 4, 1985: 47.
[40] Weiss, Improving the Linkage, op. cit., p. 70.
[41] Weiss, Ibid., pp 70–71.
[42] Caplan, cited in Weiss, Ibid., p. 57.
[43] Social Research and Development of Limited Use to National Policymakers, op. cit., passim.

sociates, or through elites, opinion makers, or lobbyists to whom decisionmakers listen.

Robert Rich concluded in his study, *Social Science Information and Public Policy Making: The Interaction Between Bureaucratic Politics and the Use of Survey Data*, that decisionmakers did not utilize information from the Continuous National Survey, despite the fact that the survey was funded by and geared specifically for their use. Failure was attributed not to the quality of the data, but to lack of communication of information through the bureaucracy from a trusted aide or equivalent in the bureaucratic structure.[44]

This problem is exacerbated because, as a considerable body of literature demonstrates, research utilization is often hampered because decisionmakers do not know how to use it. For instance, in his study on the use of social information in city government decision-making, Szanton concluded:

> . . . The characteristics of the academic world cannot fully explain the frequent inability of academics to provide useful advice to urban officials since such failure was an outcome typical not only of university-based efforts to advise city governments, but of the work of a wide variety of non-academic providers of advice. . . . A far better explanation is that city governments are particularly weak and constrained users of any advice, and are sharply limited in their capacity to act on recommendations for change.[45]

There are numerous views about how to overcome these linkage problems. Some social scientists have discussed the pros and cons of whether social scientists should become advocates—directly involved in recommending policy and lobbying for the preferred option that flows from their research.[46] A variation on this model is that of the "social engineer," proposed by Janowitz and Lazarsfeld, and discussed in Chapter X, Section D[47], or the "social clinican" model, proposed by Gouldner and Rossi.[48] These models assume that objective knowledge is used directly in policymaking. They propose basically that behavioral and social scientists should work directly with decisionmakers at all phases of decisionmaking, injecting social research knowledge where relevant. Resistance to a social engineering model comes from the fact that "a democratic system does not want technocratic solutions imposed on decisionmakers; a pluralistic society does not want political controls on the freedom of research. . . ."[49]

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[44] Rich, Robert F. Social Science Information and Public Policy Making: The Interaction Between Bureaucratic Politics and the Use of Survey Data. San Francisco, Jossey-Bass, 1981, 205 pp. See also: Steven Maynard Moody. The Usefulness of Applied Social Sciences: Three Views. Policy Studies Journal, v. 11, Mar. 1983: 529; Caplan, *In* Kallen, et. al, eds. Social Science Research and Public Policy-Making: A reappraisal, op. cit.

[45] Szanton, Peter. Not Well Advised. New York, Russell Sage Foundation and The Ford Foundation, 1981, pp. x-xi.

[46] See, for instance: Horowitz and Katz, op. cit., p. 167; Grodsky, Phyllis B. Some Limitations of Social Scientists in Affecting Public Policy Decisions. Science and Public Policy II. Annals of the New York Academy of Science, v. 387, May 1982: 47-56.

[47] As cited in Lazarsfeld and Reitz, as cited in Mayer, op. cit., p. 96.

[48] As discussed by Mayer, op. cit., p. 95.

[49] Lynn, Introduction, op. cit p. 9. Weiss, Improving the Linkage . . ., p. 77.

The "social engineer" model appears to differ from the "mandarin" or public service model described by Horowitz, in which the government employs social scientists directly, but temporarily, to provide it with information needed to suggest policy options, or to monitor and evaluate public programs. The "mandarin" model also encompasses the case of social scientists who maintain their academic employment, while at the same time serving as advisor to government.[50] or move back and forth between academia and the public sector. Some recent illustrations of political scientists playing this role include Henry Kissinger as Secretary of State, Zbigniew Brzezinski as National Security Advisor, and Jeane Kirkpatrick as Ambassador to the United Nations.

There also have been numerous suggestions about setting up a "research broker" staff, in effect a trusted aid to a policymaker who translates social knowledge into policy advice, to disseminate research to the policymaker.[51] The National Research Council, for instance, recommended that to enhance utilization, "departments and agencies should organize their planning and budgeting activities to provide a significant role for knowledge brokers, who should assume increased responsibility for policy planning and program development.[52]

Richard Levinson, a sociologist who served as a congressional aide, recently wrote that effective brokering or linkage of this sort, at least in Congress, occurs most frequently not via individual researchers, but via the "input of advocacy or interest groups as they prepare arguments in support of or in opposition to a bill." The implication is that ". . . for sociologists to have an influence on developing federal social policy, our findings must accumulate on an issue and then be used to address or shape proposals for policy by organizations with regular congressional contact." [53]

I. Translation of Scientific Research Findings by the Media

Carol Weiss and her associates have concluded that one critical factor necessary to promote utilization is "translation" or reporting of research findings is the mass media. This reporting may influence decisionmakers directly or may influence the attitudes of those from whom the decisionmakers seek advice. Therefore, it may be to the advantage of behavioral and social scientists interested in ensuring use to hold press conferences to describe their findings and to write short layman's versions of their research reports. Media reporting of such research tends however, to be confined to those stories considered "newsworthy" by the media. This

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[50] See, for instance, the case of social scientist Graham Allison, dean of the John F. Kennedy School of Government at Harvard, who, reportedly, has served as advisor to the Pentagon, the Central Intelligence Agency, the State Department, and the Office of Management and Budget. (Weinkopf, Michael. Academic Juggles 2 Roles at Pentagon. Washington Post, July 11, 1985: A19.

[51] Sundquist, James L. Research Brokerage: The Weak Link. *In* Lynn, Laurence E., ed. Knowledge and Policy: The Uncertain Connection. Washington, National Academy of Sciences, 1978, pp. 126–144. Study Project on Social R and D, Vol. 5.

[52] Federal Investment in Knowledge of Social Problems, op. cit., p. 6.

[53] Levinson, Richard M. Social Science Research and Congressional Policy. ASA Footnotes, May 1985: 8.

limits reporting of some stories.[54] In addition, as reported by Eleanor Singer and Phyllis Endreny, "For the public, one might speculate that as increasing coverage exposes increasing contradictions, familiarity will breed its predictable mixture of skepticism and contempt." This tendency will be exacerbated since ". . . many of the social contributions of social sciences—e.g., in the areas of social and economic indicator measurement—have become so routinized that they are no longer explicitly identified as social science activities."[55]

J. Policy Sciences

The alleged difficulties of applied social science to have a significant impact on policymaking and dissatisfaction with the constraints of the "enlightenment" mode of influencing policymaking, have given momentum to the development of a relatively new field, called "policy sciences." This development represents a shift from a discipline-centered approach of the production of knowledge, to a problem-centered approach premised on the notion that application of knowledge in policymaking does not occur automatically.[56] Training programs for policy scientists are unique and often take place in separate schools of policy science and analysis.[57] They are designed to produce researchers who can understand the dynamics of the policymaking process and are sufficiently familiar with the discipline knowledge bases and needs and timing of policymakers to be able to integrate behavioral and social sciences directly into the policy process.[58] In fact, policy researchers have produced an Encyclopedia of Policy Studies.[59] Policy researchers generally have

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[54] Lecture by Carol Weiss at the American Psychological Association, May 29, 1985. Singer, Eleanor and Phyllis Endreny. Social Science in the National Media: The Reporting of Social Science Research. A paper prepared for presentation at the 79th Annual Meeting of the American Sociological Association, Aug. 27-31, 1984. 20 p.

[55] Ibid., p. 17.

[56] See Etzioni, Amitai. The Need for and Ways to Enhance Policy Science Capacity of Social Sciences. Testimony before House Committee on Science and Technology. Task Force on Science Policy. The Role of the Social Sciences. Sept 19, 1985.

[57] Wildavsky, Aaron. Speaking Truth to Power. The Art and Craft of Policy Analysis. Boston, Little, Brown, and Company, 1979. 431 p.

[58] Nagel, Stuart S., ed. Policy Studies and the Social Sciences. Lexington Mass. Lexington Books., 1975, 315 ps. McCall, George J., II, and Weber, George Henry. Social Science and Public Policy. Port Washington, New York, Caplan's study of the variations in use of social science information among 204 decisionmakers led him to similar conclusions:

> effective utilization probably will proceed best if it is pursued through a set of individuals representing different combinations of roles and skills located in an institutional arrangement that allows them to take into account the practical factors affecting both the production and the use of knowledge.

Among the roles he identified for this type of "broker" or policy scientist are:

> (a) making realistic and rational appraisals of the relative merit of the enormous amount of diversified information that abounds in the social sciences; (b) making appropriate reproductions of information from the universities to the policy setting so as to overcome problems of translation; (c) recasting policy issues into researchable terms; (d) recognizing and distinguishing between scientific and extrascientific knowledge needs; (e) dealing with the value issues and bureaucratic factors that influence the production and use of scientific knowledge; and finally (f) gaining the trust of policy-makers as well as sufficient knowledge of the policy-making process to substantially introduce social science knowledge in usable form into the policy-making process at the key points where it will not likely be used.

(Caplan, Nathan. A Minimal Set of Conditions Necessary for the Utilization of Social Science Knowledge in Policy Formulation at the National Level. In Weiss, Carol H., ed. Using Social Research in Public Policy Making. Lexington, Mass., Lexington Books, 1977, p. 196.)

[59] Nagel, Stuart S., ed. Encyclopedia of Policy Studies. New York. Marcel Dekker, Inc., 1983. 914 p.

been viewed as on the periphery of the behavioral and social sciences disciplines. There are separate professional associations and journals for policy sciences analysts.[60] Policy researchers do not look to the disciplinary associations or academic departments for rewards, peer review, or professional status. They tend, instead, to seek recognition from others in this field or from policy makers.

K. Summary and Concluding Observations on Utilization

There are many examples of the application of behavioral and social science research in clinical, research, and industrial settings. There is also evidence of the use of such sciences in policymaking.

Despite this evidence of use, complaints about the lack of effective utilization abound. Many dilemmas and obstacles hamper the effective use of behavioral and social research in policymaking. The major obstacle is the social and political climate. Policymaking is a process that uses many inputs—values, advocacy or interest group pressures, and scientific information—to name but a few. Often the validity of behavorial and social science information is measured against standards embodied in the consensus of prevailing social and political values. Verified, or even non-verified, behavorial and social information will be used in policymaking if it coincides with these values. Findings that may be contrary to the prevailing consensus may well have long-term value in shaping a future consensus with policy consequences, but social scientists and policymakers may not at that time recognize and credit the social science contribution. The effectiveness of utilization also varies with the policymaking situation. Some situations demand short-range applied science answers; others require answers to fundamental questions that only basic science can provide. If one type of information is substituted for another, utilization may be judged ineffective. Other factors which impede utilization are: behavioral and social science information may be counterintuitive, irrelevant, politically naive in that it challenges existing bureaucratic authority, too late, overly quantitative and jargon-laden, and inaccurate or unverified.

Studies of knowledge utilization of the behavioral and social sciences indicate that research information in these disciplines is used most effectively when judged according to an enlightenment model. According to this model, no one piece of research can be pinpointed, necessarily, as having influenced any one particular decision—but behavioral and social science research, over time, provides decisionmakers with ". . . an intellectual backdrop of concepts, propositions, orientations," and data.

Some policymakers, aware of the approximately $2 billion annual support level for behavioral and social research and development and related activities, may consider inefficient, or a poor return on investment of public funds, the limited kind of utilization implied by the enlightment model. Indeed, some behavioral and social scientists have criticized their colleagues as well as policymakers for having too many expectations for these sciences that cannot be fulfilled.

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[60] Nagel, Stuart S. Contemporary Public Policy Analysis. University of Alabama Press, 1984. 174 p.

On the other hand, it must be pointed out that this model, premised on the notion of the cumulative dissemination and utilization of information over time—information which is used in tandem with other kinds of information, value considerations, cost-benefit tradeoffs, and constituency pressures—in policymaking may also be a valid explanation of the way natural and physical sciences information influences policymaking. There is also the consideration that the cost of behavioral and social science research—probably about $721 million in fiscal year 1986—is only a small percentage—about 4.6 percent of the total annual expenditure for all federally funded scientific research and development in the fiscal year 1986, estimated. Evidence was given in this study to illustrate the value to society from Federal investments in many types of behavioral and social science research, experimentation, and development.

This chapter indicated some possible ways to enhance the return on Federal investments in the conduct of federally supported behavioral and social science research and development. But this probably requires improved priority setting by both producers and users of such knowledge. In addition, according to many experts on utilization of knowledge, who were cited in this report, some of the practices and procedures of behavioral and social research may hamper effective utilization. Among the recommendations made in this chapter to improve the application and utilization of behavioral and social science research are the following: considering ways to expand support (from Government and the scientific community) to produce more long-term, anticipatory, research on fundamental issues, without jeopardizing Government's need for short-term, applied research; lowering expectations; confining research explicity for Government to the evaluation of existing programs; ensuring that adequate attention is given by both researchers and policymakers to the issue of policy and program implementation; improving dissemination of information about the outcome of research within an agency; enhancing use of the "research broker" function, whether within an agency or through lobby groups; and attempting to widen press coverage of behavioral and social research, so as to improve communications with decisionmakers.

The discipline of policy sciences is linked to both the behavioral and social sciences disciplines and the policy process. It was created partially on the premise that policy analysts can provide policymakers with more relevant and timely information than can disciplinary scientists. This kind of researcher may complement the work of those social scientists who choose to maintain an arm's length distance from the policy process because it is an alien environment or in order to avoid the real or perceived threat of being co-opted and losing their scientific objectivity and independence. Whether or not the utilization of behavioral and social sciences information has been improved via the mechanism of policy research has not been examined.

XII. CONCLUSIONS AND IMPLICATIONS FOR POLICY

Behavioral and social sciences research encompasses a vast multifaceted enterprise of such magnitude as to defy easy generalization. It includes such sciences as anthropology, sociology, psychology, political science, economics, linguistics, psychobiology, and geography and regional science. Fiscal year 1986 Federal obligations for research in these fields are estimated to total about $722 million. No current, accurate data are available to describe obligations for development, dissemination, and related activities, but based on past trends, total Federal funding for the behavioral and social sciences, including funding for development and dissemination, is estimated to total at least twice or perhaps triple that amount. Behavioral and social scientists constitute about 11.3 percent of the total number of employed U.S. scientists and engineers. They consisted, in 1983 of 143,500 psychologists and 247,200 social scientists. About 12 percent report R&D as their primary work activity.

The history of Federal support for the behavioral and social sciences shows that the Federal Government has played a major role in shaping these fields of science via funding and through the creation of institutions to support basic and applied research, train students, and regulate some research procedures. It is estimated in this report that Federal funding for research in these disciplines since 1967 totals about $11 billion. Federal support for these fields began in the late nineteenth century in order to satisfy utilitarian needs to describe agricultural demand and production and to improve census data. Large-scale Federal support for basic research became a responsibility of the National Institute of Health and the National Science Foundation in the 1950s. These two agencies, today, provide the bulk of all basic research support for these disciplines and the bulk of all basic university research support for some disciplines. However, about 70 percent, on average, of all Federal funds for behavioral and social research are awarded by agencies whose primary mission is not research support (the Departments of Agriculture, Defense, Justice, Labor, and other agencies of the Department of Health and Human Services).

Over the last forty years, the bulk of Federal support has gone to applied, not to basic behavioral and social science, and for social sciences, as opposed to behavioral sciences (psychology). The major social science discipline supported have been economics and sociology. Federal behavioral and social knowledge production and utilization activities were estimated to have cost almost $2 billion in the fiscal year 1977. The National Science Foundation does not publish information which describes Federal funding for development in these fields. It collects and publishes only information about research activities—which comprise about one-third of this amount (the total).

In the 1950s, Federal support began to eclipse foundation support programs, which had gone primarily to support basic research. Today foundation support for research in these fields is about 8 percent of the level of Federal support. Foundations support primarily applied research—including controversial issues that question the *status quo* and challenge existing organizations and structures—issues that the Federal Government may chose not to support.

Institutions to formalize governmental use of and access to research applications in the fields of behavioral and social science have been established over time—such as the Council of Economic Advisors and the Institute for Program Evaluation in the General Accounting Office. There have also been several proposals, not carried through to fruition, to create institutions to use behavioral and social sciences information at the presidential level in a proposed Council of Social Advisors.

Behavioral and social research appears to have been applied and used most effectively in technical, administrative and clinical settings where applications are not influenced by issues of public policy. Federally supported basic and applied research in these fields is intended to be used for both technical and policy purposes. Most Federal support for behavioral and social sciences has been for applied research to support short-range information needs. There are many complaints that much federally funded behavioral and social research—whether basic or applied—is not used directly in policymaking but that it accumulates to "enlighten decisionmaking." It may be that some expectations for using behavioral and social sciences research information in policymaking do not recognize the many obstacles to the production of such knowledge and the complexity, values, and politics of policymaking. However, it has been pointed out that more direct and deliberate use of such information might occur if there were more support for longer-range studies of fundamental issues in social behavior. There have been recommendations basically for mission agencies to fund more research of a fundamental nature in order to create a knowledge base which could be used later when short-term decisionmaking needs called for it. The current austere budgetary climate will undoubtedly require that priorities be set for funding in these fields. Some of the following policy considerations will probably be relevant to funding decisions in the future.

Given that there appears to be a need to improve priority-setting in order to enhance utilization and satisfy budgetary constraints, should Federal agencies which fund applied behavioral and social research establish interagency coordination mechanisms in order to coordinate priority setting, funding of research useful to more than one agency, and information dissemination?

Could such mechanisms be designed to ensure cross-fertilization between the conduct and use of longer-range anticipatory work, and more problem-oriented research?

Should Federal agencies devote more of their resources to the support of anticipatory or more longer-range mission oriented fundamental research, which deals with basic questions of human behavior and cause and effect, but which might con-

tribute to policy only potentially? Should short-range applied research programs be cut back?

Would it be detrimental to the long-range future of behavioral and social sciences to ask researchers in these fields to consider doing more "socially relevant" [1] basic research, with priorities guided not only by internal scientific criteria, but also more by society's knowledge needs? If it is appropriate, how will these priorities be determined? What role can policymakers play in determining priorities?

Much support from the research support agencies focuses on development of databases and refinement of quantitative research methods, thus perpetuating the legacy of early support patterns, when criticism forced these agencies to support primarily objective, "scientific research". Questions remain about whether Federal agencies need to promote cross-fertilization between basic research of this nature and applied research needs in the domains of the behavioral and the social sciences.

Should attempts be made by Federal bureaucrats to apply the contributions and understandings of basic research in the applications of the mission agencies, rather than leaving cross-fertilization efforts to researchers themselves?

Should such efforts be spearheaded by the Government's largest supporters of behavioral and social research—the Defense Department, the Department of Health and Human Services, the Agriculture Department, and the National Science Foundation?

Before the establishment of Federal basic research support agencies, non-profit foundations provided behavioral and social researchers with core support to enhance methodologies and create research institutes. Foundation support now constitutes about 8 percent of the Federal level, and has been reoriented to support applied work, especially in controversial subjects which the Government avoids.

Have levels of foundation support been reduced as a result of various Federal regulations?

Should the Government consider altering some of the tax burdens which affect the formation, funding, and functions of foundations, so as to increase foundation support?

Several other factors affect utilization of research—the most salient being the political system—that is, research information tends to be used most directly if it supports a policymaker's prevailing views—whether that policymaker be a Federal bureaucrat, Federal elected official, or a lobbyist. Several cases in this study demonstrated the pertinence of this practice. They dealt with the use, or lack thereof, of behavioral and social science information in such areas as: presidential commissions, court cases such as Brown vs. Board of Education, studies of juvenile delinquency, the Coleman studies on school desegregation, Moynihan's work on black youth, intelligence testing, and disillusionment with the "Great Society" programs. However, there are several other factors which hinder utilization. These include: university reward systems which do not

[1] This term is based on the writings cited above of Roy and Shapley, and Scott and Shore, passim.

value applied work as much as basic; reports which are too late, too-long, and too-jargon laden; fraud and deception in research; policymakers who cannot specify their research needs; and the adequacy of "research brokers" who can "translate" behavioral and social science research into the kind of information that is useful for decisionmaking. This latter factor is both a cognitive and an interpersonal process.

Actions have been suggested to overcome these obstacles. Some might require Government action, but many would require responses by behavioral and social scientists. The following issues may warrant additional attention:

Has the Federal Government come to expect too much from behavioral and social science research as an aid to policymaking? Should the Government lower expectations, and, in the applied area, support primarily research related to program evaluations or outcomes, rather than asking scientists as much to develop suggestions for new programs and policies?

Do institutional review boards, set up to ensure compliance of researchers with regulations to minimize the effects of research on human subjects and to check fraud and abuse operate as intended by statutes and policies governing their creation? Does Congress need to improve oversight of institutional review boards?

Are codes of ethics developed by the professional associations being implemented satisfactorily?

Can behavioral and social scientists enhance their utility to Government by overcoming some of the procedural, but apparently crucial, factors which hinder use, including:

—improving the intelligibility of reports, by deemphasizing jargon and quantification, and

—producing reports on a more timely basis.

Several kinds of organizational arrangements have been used in the past to produce policy relevant behavioral and social research for the Government and other kinds of arrangements have been proposed. These include federally funded research centers, exemplified by the Urban Institute and the Wisconsin Institute for Research on Poverty. Advisory commission reports and recent congressional testimony have suggested variations: a Graduate School of Applied Behavioral Science to do multidisciplinary research and a series of social problem oriented research units funded by the National Science Foundation and other variations. There also have been proposals to shift all support for basic and applied research to a National Social Science Foundation. The Congress may want to explore these issues:

Considering the magnitude of Federal expenditures for social and behavioral research, the needs expressed recently to trim Federal expenditures, and also the widespread complaints about lack of effective use of knowledge from these disciplines, should the Federal Government explore whether it may be in the public interest to create a research funding mechanism or agency exclusively to produce behavioral and social research for policy purposes—one that serves the potential needs of all Federal agencies? Or has the pluralistic support pattern of the

past served federal needs adequately and provided an adequate return on investments of Federal dollars?

There is also a widely held view that the use of the behavioral and social sciences in policymaking is hampered by lack of attention to the "implementation" or "development" phase of the research and development sequence. The lack of emphasis appears to prevent researchers from assessing some of the administrative obstacles to program design and may narrow the perspectives of research funders, who may not believe that implementation is as important as policy and program design. A related issue is that many studies have shown that utilization is enhanced by the use of "research brokers", consisting either of in-house staff or advocacy groups, to translate scientific information into terms that the policymaker can understand. Considering these obstacles to use, the Congress may wish to consider:

Should policymakers and social scientists give more attention to the issue of implementation in the design and evaluation of programs, to ensure that policy advice is carried through to the crucial administrative phases of program and policy delivery?

Should Federal agencies establish a "research broker" staff to improve communications between researchers and policymakers?

Industry uses the behavioral and social sciences in support of primary work, such as the survey research industry, estimated to be a $4 billion annual business, and in secondary roles in other industries, including communications, transportation, food, and high-technology development. There is no reliable information available to describe the extent of industrial support for these fields. This report showed that academic employment for behavioral and social scientists is shrinking, while industrial employment is increasing. But the vast majority of behavioral and social scientists in industry do not do research as their primary work activity. It may be that more and better data should be collected to describe industry's role and to develop analyses of implications for research policy and personnel training. There appear to be similar data gaps in the collection of information about State and local government support for research in these fields. The Committee may want to consider the following issues:

Since current data are inadequate to describe industry's support of behavioral and social research, it may be necessary to collect more accurate data through an agency, such as the National Science Foundation or the Commerce Department.

Should the National Science Foundation reestablish a program to collect data about State and local government support for behavioral and social sciences research?

This study reported that there appears to be an oversupply of behavioral and social scientists. Employment patterns appear to be shifting over time. The proportion of psychologists and social scientists employed in academia has started to decrease. In addition there are decreasing numbers of doctoral level social scientists and psychologists training to concentrate on research. Some of these shifts appear to stem from to declining university enrollments for study of these fields. Some appear to be the result of natural

market mechanisms—that is, employment of social scientists and psychologists has increased in industry, which may have drawn off some manpower to new industrial job opportunities. It is not entirely clear whether the current behavioral and social science labor pool is training in the areas sought by industry.

Another issue also appears relevant. Many manpower training programs in the social and behavioral sciences have been supported primarily by the basic research support agencies of the Federal Government. Behavioral and social sciences research support programs in the National Science Foundation and the ADAMHA have experienced real dollar cuts in recent years. Federal policies, therefore, may have contributed to the shifts in the character of the research personnel pool. Some say that the critical mass of scholars needed to do valuable research has eroded seriously.

The Congress may wish to examine further manpower supply and demand patterns in the behavioral and social sciences and, if projected shortfalls in supply are discovered in particular areas, it may seek to determine the precise effects of retrenchment in Federal support programs that directly and indirectly support production of scientific personnel in the behavioral and social sciences. In addition it may want to consider further the composition of the skills of the labor pool now considered excessive.

In addition, as demand shifts from academia to industry, a case can be made for industry's responsibility to pick up some support functions. Government/industry cooperative programs may be appropriate. In addition, it may be relevant for the Congress to examine whether industrial programs in this regard would profit from inducements and incentives, such as those which might be afforded by including the behavioral and social sciences among the research fields eligible for industrial tax credits in the Economic Recovery Tax Act, P.L. 97-344, that is up for renewal in 1986.

In addition, the Congress may want to examine the effects on research production capabilities in universities that might result from the decrease in academic employment for behavioral and social scientists. In comparison with the decade of the 1970s, only about one-half the amount of federally funded basic social science research is being conducted in universities in the 1980s. Is the focus of research shifting? Is this an appropriate development? Or will it weaken the scientific foundations of these disciplines?

Another major data gap appears to warrant attention. The only complete survey to describe the full range of Federal responsibilities and obligations for the behavioral and social sciences was a report published in 1978 by the National Research Council of the National Academy of Sciences. As noted above, it concluded that Federal expenditures for behavioral and social research and development and related activities totaled almost $2 billion for 1977. Currently the National Science Foundation report funding data only for the research component, which constitutes about one-third of this total.

Considering the lack of current information to describe Federal obligations for all behavioral and social research and de-

velopment, the Congress may wish to request some governmental agency to collect information to describe and inventory development and dissemination responsibilities and funding levels. They appear to be double or triple obligational levels for research, but without sound data, no firm estimates, nor policy issues can be suggested.

NSF data show that Federal support for basic and applied behavioral and social science research increased as a percentage of total Federal research funding, from about 3.9 percent in 1962 to a high of 8 percent in 1971, and then started to decrease steadily, to about 4.8 percent estimated in 1985. There was an accelerated decrease of about 1 percentage point beginning in 1982, reflecting the cuts instituted by the Reagan Administration. These, reportedly, were made on the grounds of political philosophy and fiscal responsibility. Social sciences funding bore the brunt of the cuts, while priorities in psychology were shifted. Dissatisfaction with the character of research output and with research utilization may have contributed to these cuts. Some believe that these cuts and shifts eliminated funding for marginal projects and, as a result, were wholly warranted solely for such reasons. In terms of current dollars, fiscal year 1980 funding levels were not restored until fiscal year 1985. But the cuts, expressed in terms of constant dollars, have not yet been restored. The constant dollar obligation level for the period 1982 to 1985 is about $328 million, about 19 percent lower than the average Federal obligation level for these sciences in terms of real dollars for the period 1970 to 1980.

Considering the recent cuts in funding for these fields or the shifting of priorities, as well as calls for more cutbacks in Federal funding to balance the budget, the Committee may want to examine the effects of retrenchment on: manpower development, scientific progress, research capability, types of research supported, and other aspects of scientific capability in the behavioral and social sciences.

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